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ABSTRACT

This manual provides an instructional overview of Internet resources with student exercises. The work consists of nine chapters: (1) Introduction to the Internet; (2) How to Access the Internet; (3) Electronic Mail; (4) Gopher; (5) File Transfer Protocol-FTP; (6) Newsgroups & Newsreaders; (7) Telnet & TN3270; (8) World Wide Web; and (9) Future of the Internet: Where Are We Heading on this Superhighway? A suggested reference list and a list of interesting sites on the Internet are appended. (AEF)

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ED 402 905

A GUIDE FOR USING THE INTERNET

Herb Brown

U.S. DEPARTMENT OF EDUCATION
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A GUIDE FOR USING THE INTERNET

Herb Brown

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I would like to offer special thanks to many people who have made this publication possible. First I would like to thank Delta Pi Epsilon for giving me the opportunity to write this manual for publication. I would also like to thank my family and my fiance for the never ending moral support which they provide in these crazy times. Special thanks to Dr. B. June Schmidt for support and for helping me find the many opportunities that I have had while at Virginia Polytechnic Institute and State University. Finally, thanks to God for without him nothing is possible.

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This publication is dedicated to my family, friends, and fiance for their support and to all my friends and associates in Vocational Education at Virginia Tech and especially my father, Herb Jr., who first introduced me to computers and sparked an unknown fire in the "Untrainable."

Author: Herbert F. Brown III, January 1996

Graduate Teaching Assistant, Virginia Polytechnic Institute & State University - Department of Teaching & Learning, Business Education

Chapter 1

Introduction to the Internet

How did the Internet Begin?

The Internet began approximately twenty years ago out of an effort to connect a U.S. Defense Department network called the ARPAnet and various other radio and satellite networks. It was part of an experiment to create a network that could support the Department of Defense in case of partial communications outages such as those that would be experienced in a bomb attack. The network would contain excessive redundancy and could re-route information among hundreds of computer sites in the event that part of the network was down, due to military action or natural disaster.

It was designed using the Internet Protocol (IP) that would allow the data transmitted to be *packaged* inside an electronic IP envelope that would be properly addressed and sent to the receiving computer system. Electronic envelopes, containing packets of data, were sent across the network; the various computer systems that comprised the Internet automatically sent them throughout the network of computers based on the computer's selection of the best route. The alternative was for computers to send the packets via a single, predetermined communications link which was the *only* way they could get the packets to their destination in the event of a loss of computer links on the network.

What is the Internet?

The Internet is a very large, global network of interconnected computer networks. This global network, known as the Internet, is very dynamic; information appears and disappears quickly. It also provides an excellent educational opportunity, allowing users to traverse the world, seeking information, without ever leaving their homes or offices. The Internet is a quick way to retrieve information, though caution must be exercised because not all information may be current. Internet sites communicate by using common protocols. A protocol is similar to a language used to communicate among several different computer networks, and TCP/IP is the current standard.

The Internet is useless without a computer, and one must have a computer and a modem or other communications device that will link a computer to this global network of networks. As mentioned previously, the Internet is a combination of the original ARPAnet and other computer networks throughout the world which have been connected to provide worldwide access to any computer user with the proper equipment. Most academic institutions and many public schools, communities, businesses, and commercial network providers are connected to the Internet. Every day more computer networks join this conglomeration of computer networks to allow them access to the world for a minimal fee to access and use tools such as gopher, e-mail, telnet, and web browsers. The Internet has and will provide small businesses the global communication capabilities of the

larger companies, thus allowing them to better compete with the large corporations that may dominate their specific industry. Though businesses use the Internet more and more everyday, this was not always the situation and it could help to cause the commercialization of the Internet. The Federal Government is already considering dividing up the rights to their sections of the Internet to telecommunications giants such as the BELL companies and others.

Netiquette - What is Allowed on the Internet?

What you are allowed to do on the Internet is a very complex and dynamic issue that is influenced by laws, governments, and ethics. Previously, the Internet was used for academic and research purposes almost exclusively; now it includes more business activities and may become much more commercialized. Some of the legal implications include:

- Federal subsidy money pays for large sections of the Internet. These subsidies do not allow for purely commercial use of the Internet.
- The Internet is not just a national network but a global network. Since it is a global network, such issues as export laws come into play as computer bits cross national boundaries.
- Whenever anything is shipped, such as software, from one place to another, considerations for intellectual property and license issues must be observed.
- State laws and intrastate transport of materials can also cause dilemmas. For example, an individual was taken to court for allowing a computer user to download pornographic material into a state that had laws against that type of material. What may be allowed in one state or country may be illegal in another!

The government, since it has an interest and federal dollars invested in the Internet, will play a role in what does and does not take place on the Internet. Currently, the federal government is debating restrictions that could be placed on the Internet and the materials that traverse the Information Superhighway known as the Internet.

Network Ethics also need to be considered when accessing the Internet. When surfing the Internet, a user should consider the following two underlying principles of Ethical access to the Internet:

- Individualism is honored and fostered
- The network is good and must be protected

Threats to the Internet often come through the second ethical principle in the form of excessive use of the Internet for unintended purposes and political pressures. Other problem areas can include:

- Excessive game playing
- Excessive ill-conceived use
- Hateful, harassing, or other antisocial behavior
- Intentional damage or interference with others (including the introduction of Viruses or unauthorized "Hacking" into remote computers)
- Publicly accessible obscene files

The common theme to remember is to use common sense and to not abuse the resources of the Internet!

Chapter 2

How to Access the Internet

How do I Access the Internet?

Now that you know what the Internet is you are probably asking, "How do I get on this Information Superhighway?" Several ways exist to access the Internet, including commercial service providers, universities/colleges, and establishing your own link to the Internet (have your own site). Each access method has its advantages and disadvantages. Due to the extensiveness of services available, general methods of access will be introduced, how to get that access, relative costs associated with each, and the level of knowledge needed to access by each method.

Service Providers

Service providers are companies that were established for the primary purpose of providing a means to access the Internet for the general consumer. These companies include: America On-line (AOL), Netcom, Compuserve, and Prodigy, to name a few. These service providers have national scope, whereas other companies may be only regional or local. Some local Electronic Bulletin Board Systems (BBS) also allow limited access to the Internet.

To access the Internet using a service provider, users must get the specific software for the company that they want to use and create an account, usually with a credit card that will record monthly charges. They can access the Internet as often as they like. Many companies, such as AOL, provide their software free of charge in a marketing scheme to attract more on-line customers. This free software is often included in magazines or with newly purchased computer systems.

The software may be free, but the service is not. In most cases the service providers charge a monthly access fee, which allows users to access up to a specified number of hours; after those hours are used, the user is charged an hourly rate, which could prove to be very expensive. When shopping for a service provider, be sure to look at monthly and hourly charges, whether a local or 800 number is available for access, and what you get for your money.

Since these companies have been providing access to the Internet for a number of years, most of them have easy-to-install and user-friendly Internet access software. Most software is Windows (or Macintosh) based, making it easier to use; even the

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DOS versions are usually developed with a graphical user interface (GUI). You do not have to be a computer expert to access the Internet by this method; however, you do need to be familiar with the basics of your computer system.

Universities/Colleges

Another way to access the Internet is through a local university, community college, or technical college. If you have a college or university close to your home, you may want to check into the possibility of accessing the Internet through its computer system. Most colleges and universities are already linked to the Internet with high-speed communication lines. This access method is often restricted to students and faculty of that college or university; however, occasionally a non-university affiliated individual can gain access to the Internet through this method.

Public schools can also check with their local colleges and universities to determine the possibility of connecting their school to the Internet via higher-speed lines, such as ISDN(Integrated Services Digital Network) lines, through the college or university computer system. ISDN lines allow for access speeds of approximately 64,000 baud (64 kilobits per second), compared with the fastest modem speed of 28,800 baud (which requires the receiving end to also provide connection speeds of 28,800). This would likely be a less expensive way to connect a school to the Internet. Schools and individuals should contact the computing department of their local college or university to find out the availability of this method of access.

For an individual, this method could be less expensive than accessing through a service provider since many universities charge a small monthly rate for unlimited (hours) access. However, schools that contract for high-speed lines and access through the local college or university should expect to pay higher rates than going through a service provider with a modem. The ISDN lines alone will increase the costs in addition to other hardware needed on both ends to connect and handle the increased computer traffic through the college or university computer systems.

The expertise needed also varies depending on how mature the off-campus access method is at the university. Many universities use shareware software to provide access to the Internet through their computer systems. They do this to lower the cost; most shareware is very inexpensive, and additional discounts are usually provided to educational institutions. The shareware also tends to be rather good software, with a few minor bugs maybe, but still rather good. One drawback is that the shareware software may not be as easy to install and configure. The shareware often does not come with adequate documentation or help features, so the user must have a higher level of understanding or

have a computing center help desk that can help in the configuration procedure. If you or your school is attempting to connect via ISDN lines, you will need special hardware and software and a much higher level of expertise to connect your computer system to the university computer system. Save yourself some headaches and get a professional installer for an ISDN connection.

Have Your Own Site on the Internet (Your Own Domain Address)

Having your own site on the Internet is possible; however, it requires a very high level of expertise to connect the hardware and software needed to establish an Internet site. The special hardware can include, but is not limited to:

- High-speed communications line (ISDN, T1 or other high capacity line)
- Dedicated computer(s) for routers, gateways, etc.

The Internet connection will also require constant monitoring and maintaining. Good security measures must also be implemented and the system monitored for possible security breaches. Extra care should be taken if the entire school's computer system is linked to the Internet since the system will be open to the WORLD, including students who may want to break into the system and change grades or engage in other undesirable activities. If FTP sites, Web sites, and Gopher sites are established at the school, computers will have to be dedicated to this effort and be maintained regularly. An additional cost is the Domain address name registry. An Internet site must have its own domain name/address. The registration and use of a domain name carries a monthly charge. The use of high-speed lines also carries a high monthly price.

The establishment of an Internet site can be rewarding, but the set-up and configuration of the site should be handled by a professional. Maintenance of the Internet site can likely be handled by school personnel who have received training in FTP, gopher, and Web site administration. Security should ***never*** be overlooked; since connecting to the Internet opens a computer system to the World, it is always better to be safe and cautious when starting than sorry later. For more information about establishing an Internet site, consult books on the subject (see Appendix A for a list of suggested references) or your local network/Internet expert or professional. Local university or college computer center personnel ***may*** be able to provide more insight, consultation, or assistance for establishing an Internet site.

Chapter 3

Electronic Mail

What Is Electronic Mail?

This is a common question for people today. Many do not know what Electronic Mail, or its better known term "E-mail", is and how to use it. E-mail is the electronic transmission of textual messages from one computer to another across a communications medium, such as a telephone or network cable. Many company local area networks [LANs] have internal e-mail, or e-mail confined solely to a network. Other companies may have internal e-mail systems that are connected to other locations or even the world. If a company has world-wide e-mail access, it is likely sending electronic messages across the wide area network [WAN] commonly called the Internet. Throughout this section you will learn more about electronic mail using the Eudora, Windows-based, e-mail system. Figure 3.1 shows an open Eudora window.

How Does Electronic Mail Work?

E-mail works in a manner similar to students passing notes in class. The sender writes a note, folds it, and puts the recipient's name on the note. The sender then passes the note to another student who passes it on to another student and so on until the recipient receives the note. The recipient then opens the note and reads the content. Then the recipient has the option to reply.

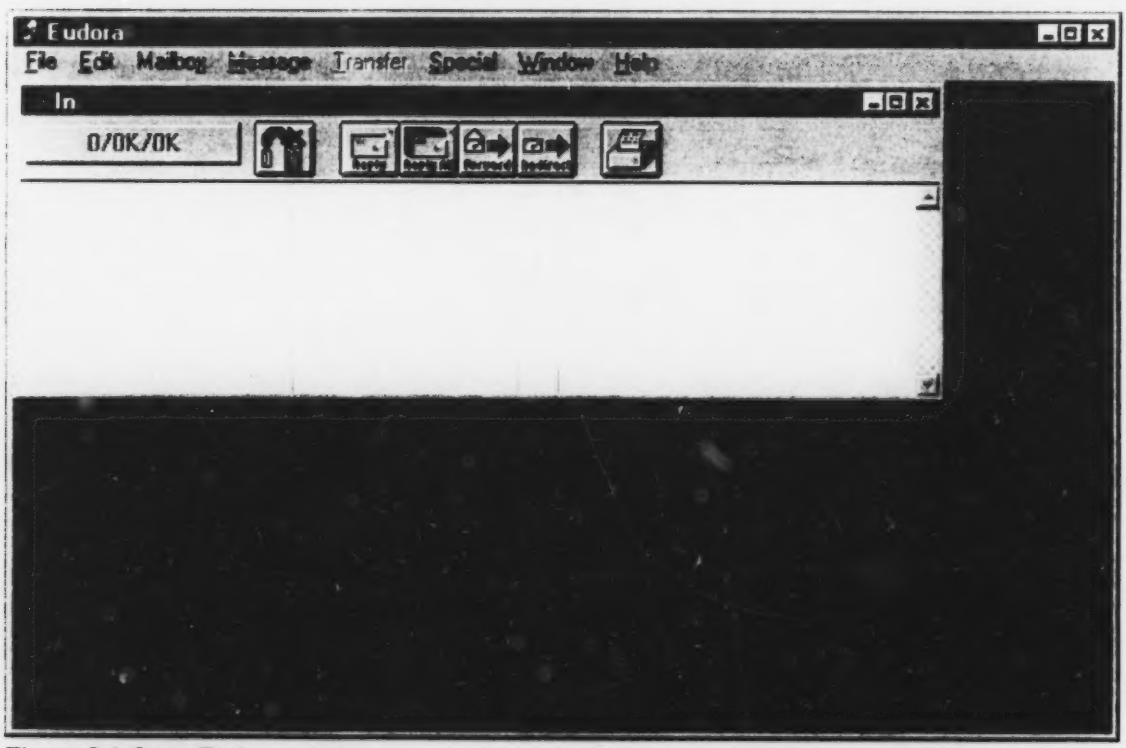

Figure 3.1 Open Eudora window

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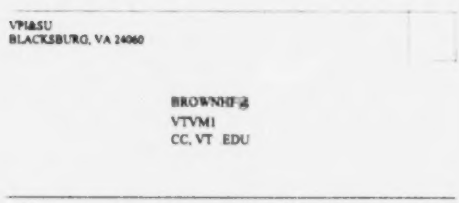
How Do I Read an E-mail Address?

Every e-mail user, whether on an internal e-mail system or connected to the Internet, has an e-mail address. This address is synonymous with a home address, and it is broken into levels called *Domains*. Each domain level identifies more specific information regarding how to route sent messages. Note the following:

E-MAIL ADDRESS: brownhf@vtvm1.cc.vt.edu

The domains for this address are:

EDU -	Largest domain, Education domain--similar to zip code. Other domains include, **.org** (non-profit organization), **.net** (network), **.com** (commercial), **.mil** (military), **.gov** (government).
VT -	Located at Virginia Tech (VT)--similar to state.
CC -	Located at the Computing Center (CC) at Virginia Tech -- similar to city.
VTVM1 -	Located on the Mainframe called "VTVM1" at the computing center at Virginia Tech--similar to street address.
brownhf -	User I.D. name, the lowest level--similar to name on envelope.
@ -	"At" symbol or separator used between user I.D. and address (domains).



Other types:

Compuserve:	xxxx,xxx@compuserve.com ("x" represents numbers separated by a comma but the comma should be converted to a period; for example: xxxx.xxx@compuserve.com)
America Online:	user@aol.com (user name in lower case, with spaces removed)
Prodigy:	user@prodigy.com (alphanumeric ID rather than a name)
Delphi:	user@delphi.com

Fortunately most users need not worry about the different addressing schemes. All e-mail messages have the return address listed in the header of the message, just like the return address on an envelope. Most e-mail systems also allow users to REPLY to mail messages. When finished reading the message, the user presses the reply button or appropriate key, and a new/blank message appears with the sender's address automatically inserted. Most reply systems will also ask users whether they desire to have a copy of the old message included with the new message. This is handy if the mail message includes a form to be completed. A copy can be inserted into the new message, which can then be completed.

How Do I Compose a Mail Message?

Composing a mail message is a three-step process:

Step 1:

Know the complete address of the person to whom you want to send e-mail. This address must be complete and be in the appropriate format. The proper format refers to the need to have all domains listed properly and in the correct order. This step also applies when one replies to an e-mail message.

Step 2:

Think of an appropriate subject line for your message. This is important because the recipient may receive large quantities of e-mail and will often skim the subject lines to see what is pertinent. Good netiquette necessitates including concise and informative subject lines for all e-mail messages.

Step 3:

Write the body of text that will make up the message content. Use proper English, and check your grammar and spelling. Unfortunately, most e-mail packages do not include spell checking programs. Try to be as clear in your writing as possible, but keep your message to the point without unnecessary content. Unnecessary content adds to the message size and requires larger storage facilities and processing power for sending and receiving computers. See Figure 3.2 for a sample of the parts of a good e-mail message.

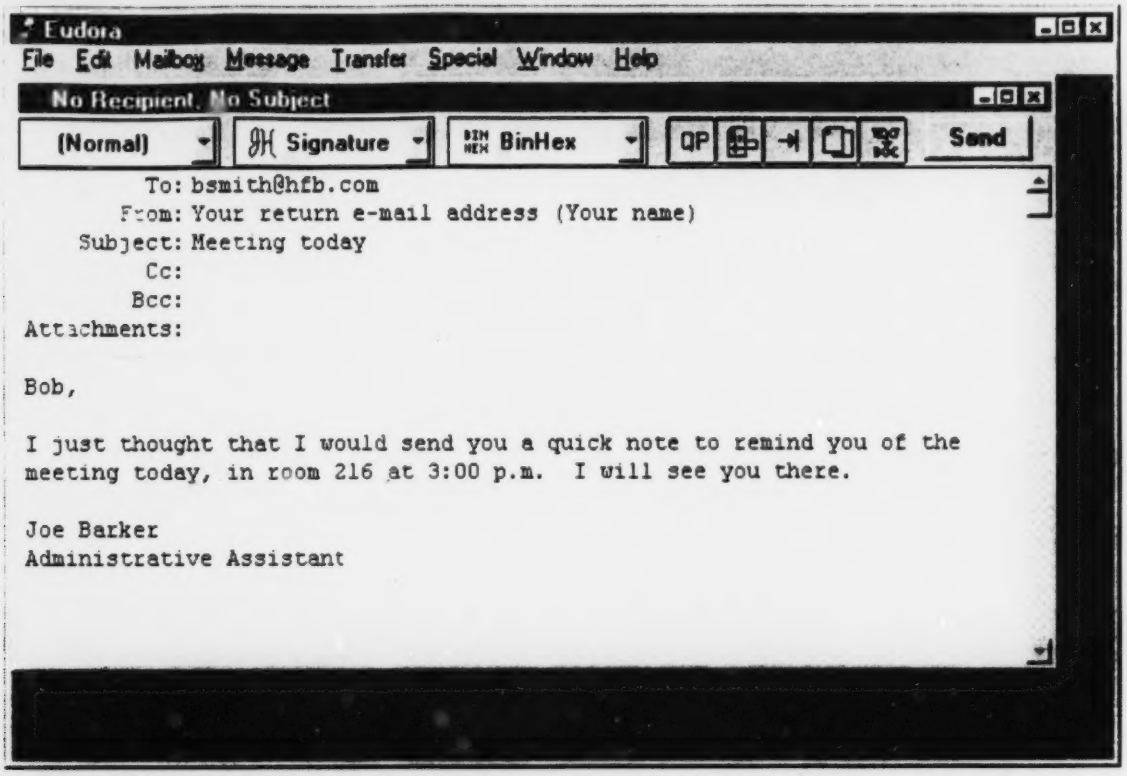


Figure 3.2 - Parts of a good e-mail message

How Do I Send the E-mail Message?

Choose the send command or press the send button, as is the process in the Eudora system. See Figure 3.3 which shows the send button. In some programs, you can send your message immediately or at a future set time, a process called queueing.

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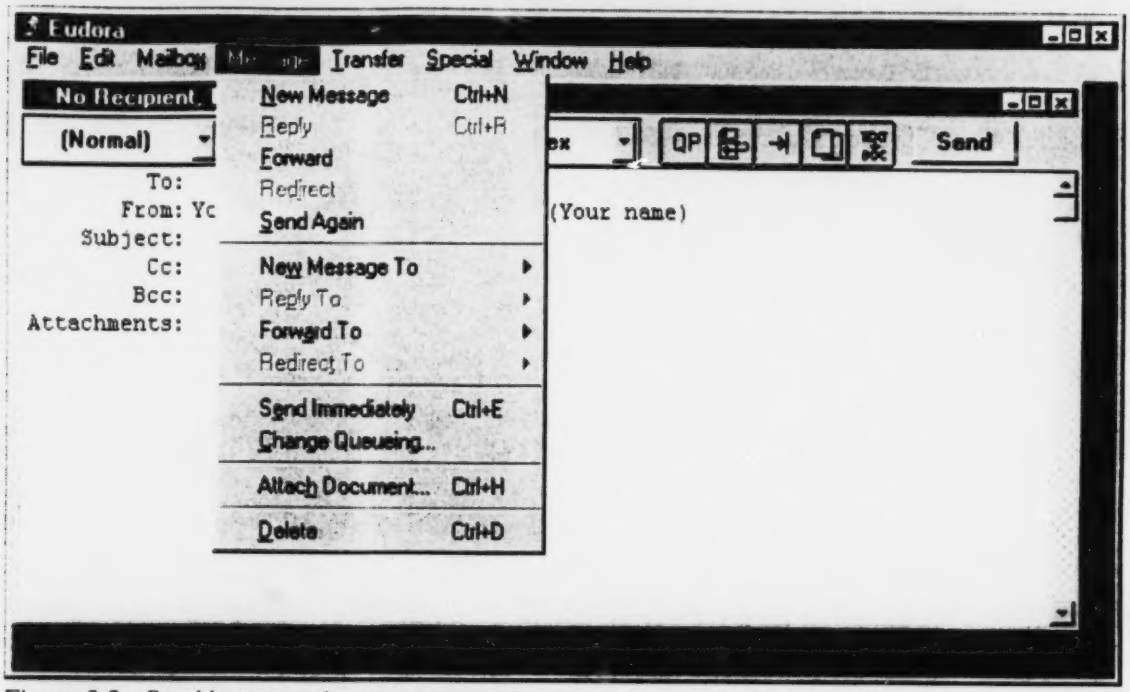

Figure 3.3 - Send button and menu command

How Do I Receive Mail Messages?

Many systems automatically check the mailbox when one logs into the host computer. Additionally, the software should have a menu item or command that checks the mail server. In Eudora the command is **CTRL + M** to check the mail, or choose **CHECK MAIL** from the File menu as shown in Figure 3.4. One need not worry about mail being delivered to his/her mailbox if the sender included the correct address. To read the message, select the message to view. In Eudora, double-click the message in the list and another window will appear that displays the message content (Figure 3.5). Other systems may require a certain key be pressed, such as an "F" key on the mainframe system displayed in Figure 3.6.

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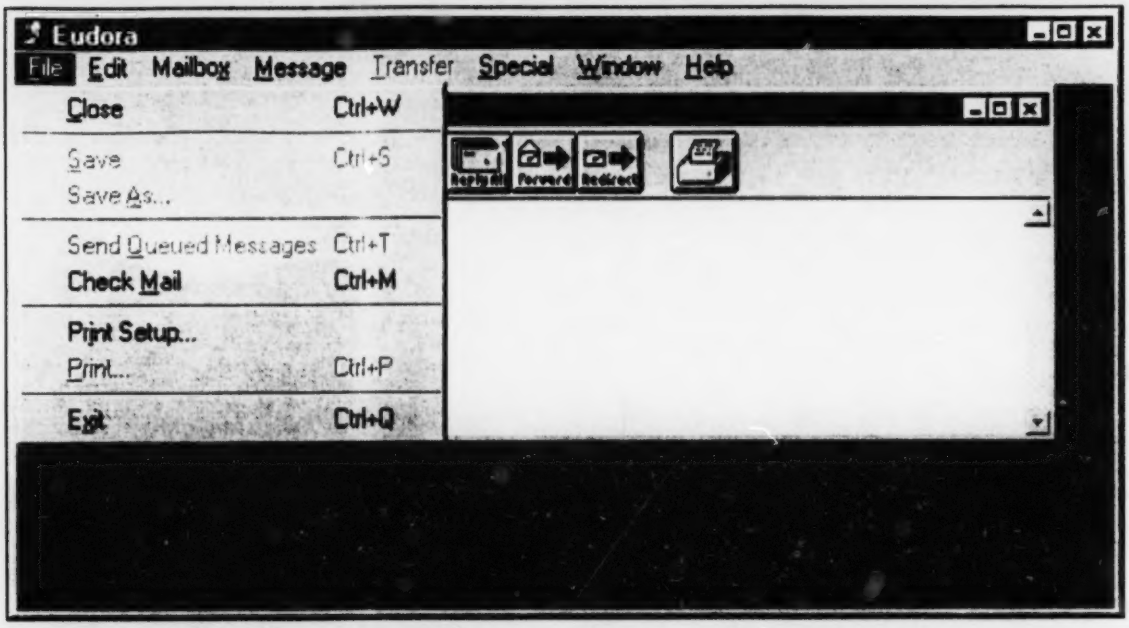

Figure 3.4 - Check mail menu command

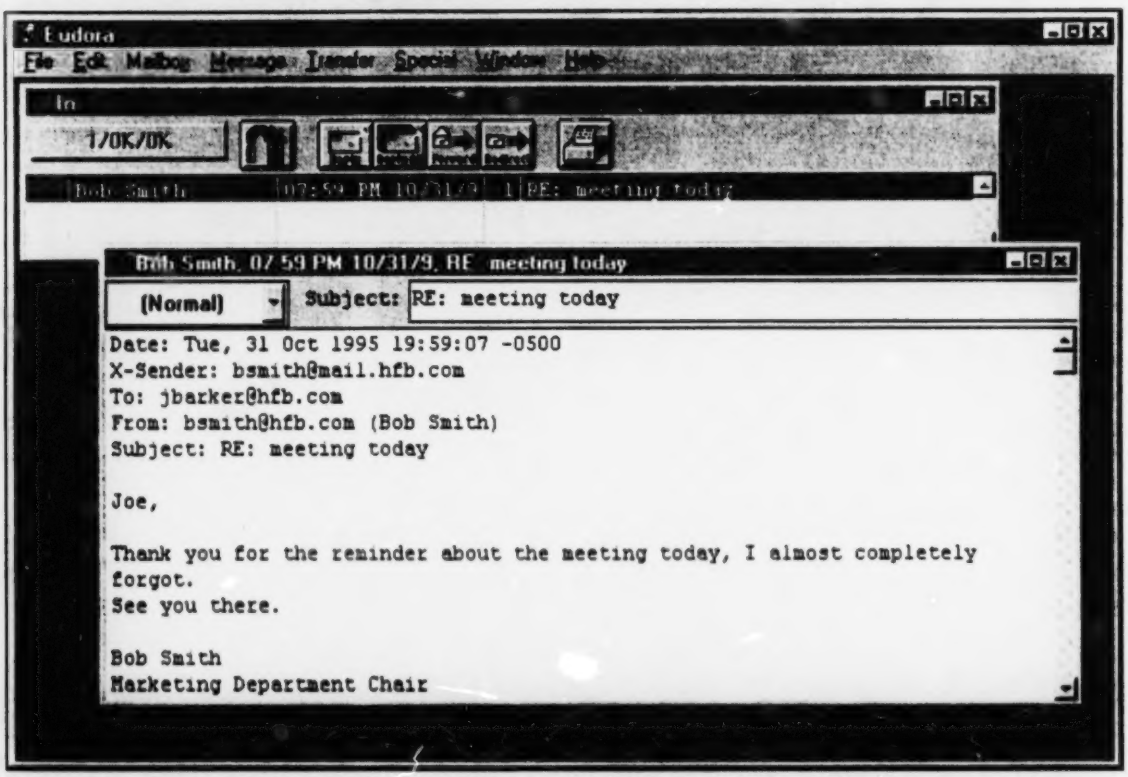

Figure 3.5 - Message window (note the message header in the list above the message window)

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em (note the "F" key menu at the bottom of the screen)

se?

lude the capability to store sent and received systems refer to these storage areas as folders, This is a good way to organize your messages by work, one for personal notes, and one for general

E-mail?

include a feature commonly called "Attachments." "attach" any file to an e-mail message. When the e- ed file is encoded with the e-mail message. Several ME (Multi-purpose Internet Mail Extensions) and oded file are sent to the recipient where the attached computer. The receiving computer must have the or MIME) to decode the attached file. If not, the g computer will properly display the e-mail d file will appear as garbage (unrecognizable) ail message. This is a wonderful method for , because any file can be transmitted this way, i.e.,

file with all formatting intact or as an executable program. See Figure 3.7 that shows the menu item for attaching documents.

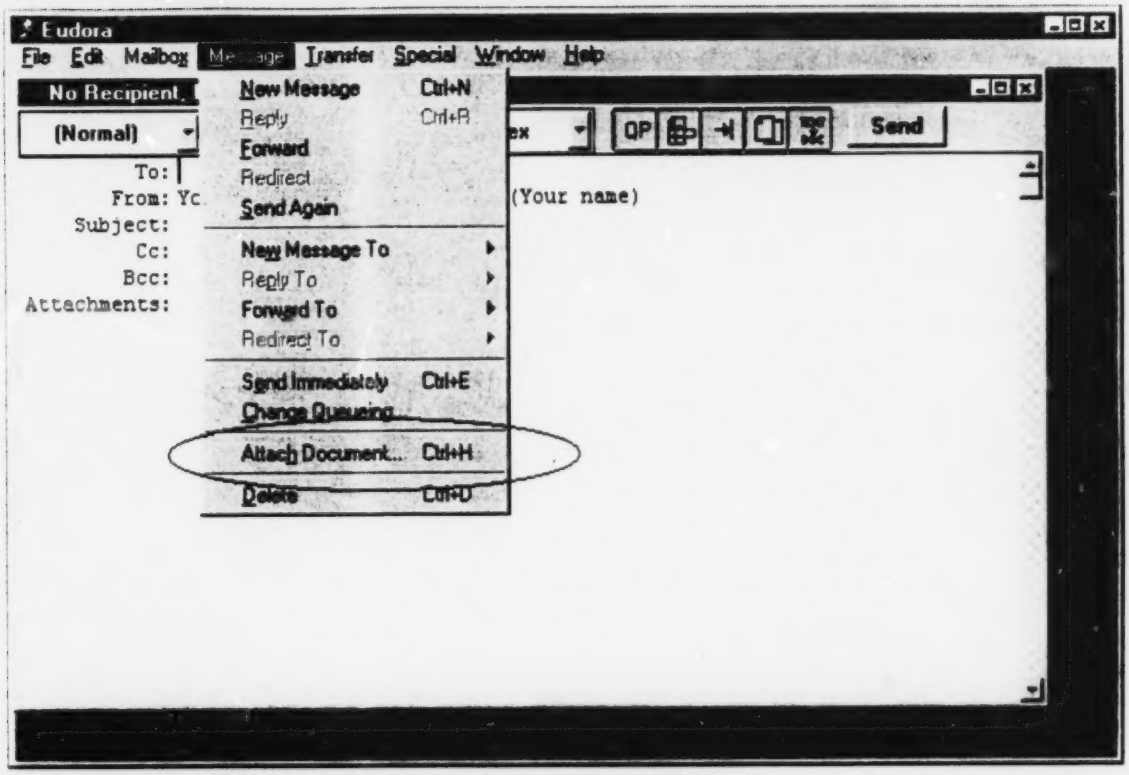

Figure 3.7 - Attach document menu item (note the item is circled)

How do I Delete Messages?

Similar to sending an e-mail message, to delete one, choose the delete command. This command could be chosen from a menu or correspond to a function key on a mainframe or other system. Some systems include a trashcan, waste basket or recycle bin (Windows95) into which the user drags unwanted material. Typically, the user selects the message to be deleted. He/she then clicks the delete button, clicks the trash can icon, or presses the delete key to remove old mail. Figure 3.8 shows the clear/delete menu item and the trash can icon.

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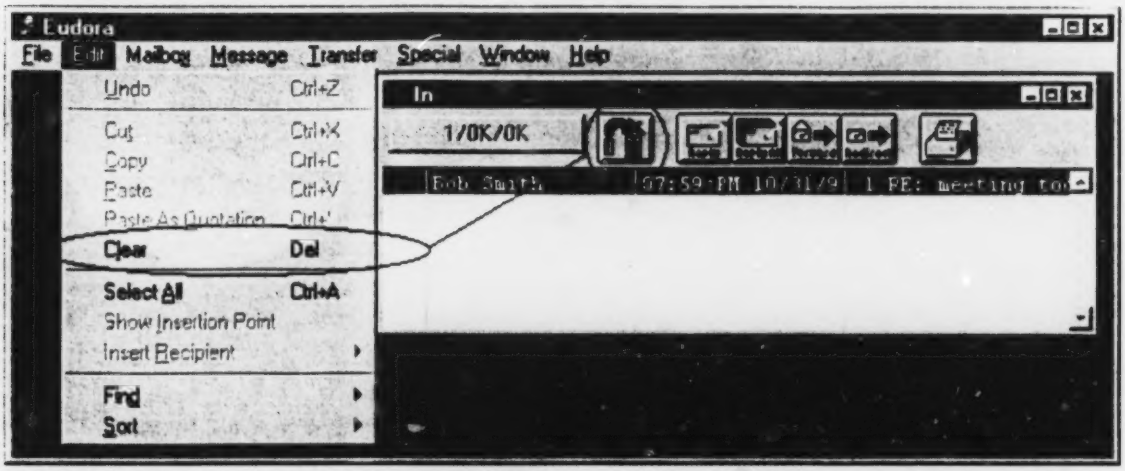

Figure 3.8 - Trash can and Deletion menu item

In What Other Ways Can I Use E-mail?

E-mail is not just used to send and receive messages among interested parties. When using some database systems, the systems will allow users to e-mail the results of a database query to their e-mail addresses, instead of attempting to print the material. Some database systems exist that allow users to submit requests for materials, similar to querying an on-line database. The Department of Education database, at **almanac@inet.ed.gov**, allows users to access stored education documents on-line and have the full text documents sent automatically to their computer e-mail addresses. A catalog of available on-line documents can be obtained from **almanac@inet.ed.gov** by sending an e-mail to this address and including in the body of the e-mail message "*send catalog*." When the computer server obtains the request, it automatically sends the requested catalog of documents back to the requesting e-mail users' addresses. Some FTP (File Transfer Protocol) systems can also respond to requests for files through e-mail access. See Chapter 5 for more information on FTP systems.

What is the Difference between Eudora and Mainframe Computer E-mail?

The main difference between the Eudora e-mail system and a typical mainframe computer e-mail system is the computer access architecture. Eudora is based on a client-server architecture, whereas mainframe systems are based on a terminal-server architecture.

Client-server systems refer to computer systems that have all of the main application processing performed on a user's personal computer. The software, in this case e-mail (Eudora) software, is stored on the user's computer; the user's computer accesses a central server computer where mail files are stored. The

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central mail server will then DOWNLOAD the mail messages to the user's computer (hard drive). They will remain on the user computer's hard drive until the user deletes the messages. This allows the central mail server computer to be much smaller, since it must only temporarily store messages and does not have to store and run the application (Eudora) as well.

Terminal-server systems, conversely, have the mail message files *and* application (e-mail) stored and run on the central computer. When a user's computer contacts the mainframe, it is operating as a dumb terminal on the mainframe system. Little to no processing takes place on the user's computer. After the user has connected with the mainframe, she/he must type the command to start the e-mail application on the mainframe. Additionally, all incoming and outgoing messages that are stored are kept on the mainframe computer's storage devices. Often, mainframe users are only allocated a certain amount of mainframe storage. After that storage is full, e-mail may be returned to the sender or lost. The client-server system described earlier is only limited by the size of the individual user's hard drive. Figure 3.9 identifies the differences between client-server and terminal-server features.

Client-server features	Terminal-server features
Smart terminal processing	Dumb terminal processing
Software stored and executed on the individual's PC	Software is stored and executed on the mainframe
Message files are temporarily stored and then downloaded for permanent storage on the individual's PC	Message files are stored on the mainframe until deleted
Amount of storage is limited only by the size of the individual's hard drive	Amount of storage is limited by the size of your account on the mainframe

Figure 3.9 - Summary of differences between client-server and terminal-server features

E-mail Exercises

1. E-mail a local Representative, Senator, Governor, or the President of the U.S. regarding an issue of concern for you, the class, or your region of the country (president@whitehouse.gov).

2. Have students develop Pen Pal relationships communicating via e-mail (preferably with individuals in another country or state) to discuss their local areas, and ask Pen Pals specifics about their states or countries. Have students report on their Pen Pals and the areas in which the Pen Pals live.

3. Develop connections between each student in the class and a student/person in another country or state. On a monthly basis (or more often), the students should ask their Pen Pals for a short news story from their regions. As a class, assemble ALL of the news articles into a Global newsletter to be distributed throughout the school.

Note: These Pen Pal links may be found through K-12 newsgroups (see Chapter 6 for more information on Newsgroups), which may identify interested parties.

4. Assign students an e-mail partner at another university and have them communicate during the semester. Each student could keep a record of the information, complete a joint assignment, or other activity. High school students could also communicate with university students to discuss college life or find out more about a certain curriculum at the college level, i.e., a career exploration project.

5. If E-mail software allows for files to be attached to e-mail messages (as binaries), try the Electronic-Paperless-Classroom. Allow (require) students to submit to the instructor all materials as attachments to e-mail messages.

Note: *I have personally used this activity for a 23-student software-based, college-level course. Having students submit their data files to me for grading, via e-mail attachments, reduced my organization needs since I did not have to keep track of their disks. Additionally, I did not have a Virus threat since I was only receiving DATA files on my computer, and no infected diskettes ever entered my computer. Some special organization was needed to keep track of student files; however, that was remedied through the creation of separate directories, under the main directory (named with the course number), for each student in the class. For example:*

-EDVT3126
-Bob
-Sally
-etc.

Chapter 4

Gopher

What is Gopher?

The Gopher Internet tool was created at the University of Minnesota. Its interesting name is reported to come from the University mascot, the Gopher. Another rumor is that Gopher gets its name from the way that it tunnels (like a gopher) through the many computer layers of the Internet. No matter how it gets its name, the Gopher is a very important Internet navigation tool.

How Do I Use Gopher?

Gopher can be found on many computer platforms, including mainframes, MS-DOS compatible computers, and Macintosh computers, to name a few. It is based on a *layered menu scheme*. When using Gopher, the user will see a hierarchy of folders or menu items from which to choose. The user then chooses the appropriate menu item, and the computer jumps to that location. For example, if one chooses the Library of Congress from a menu, the Gopher software jumps to the Library of Congress computer. Working in conjunction with Telnet/TN3270, Gopher logs your computer into the Library of Congress computer system. All of the Internet addresses are hidden behind the menu system so that the user is not troubled with the technical underpinnings that are required to jump to various computer sites. Figure 4.1 shows a typical Gopher menu screen with different directories from which to choose.

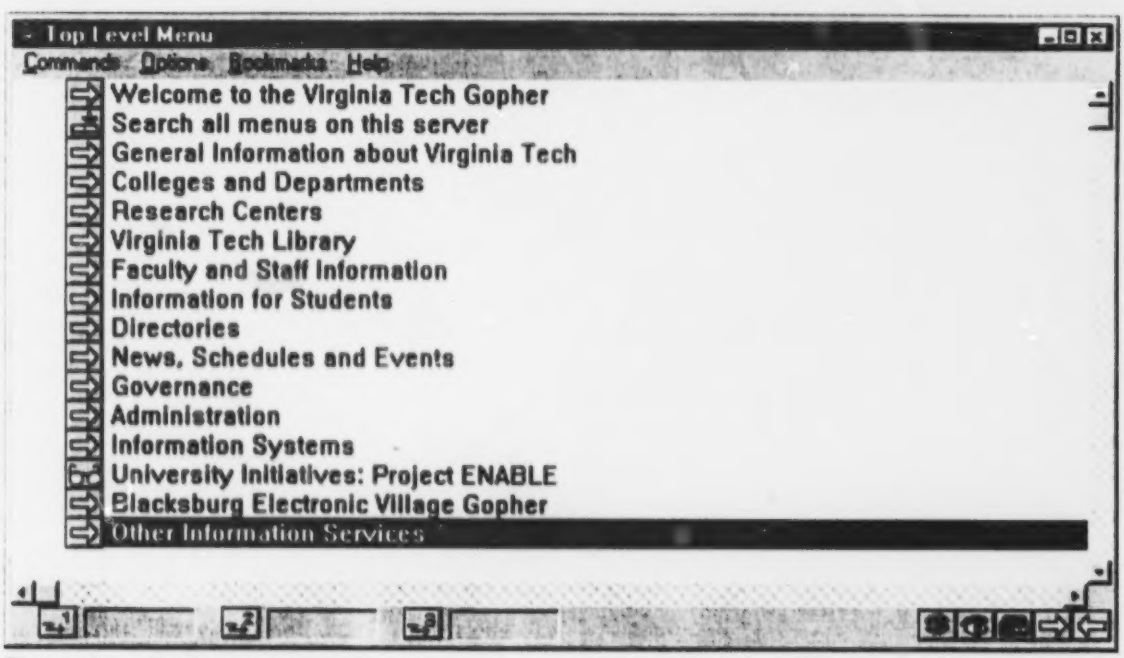

Figure 4.1 - Gopher main menu screen

What Do You Find with Gopher?

Gopher can take the user to remote computer systems that can be accessed. Gopher can also take the user to important text files on a certain subject, to graphic files, or even provide access to computer application programs. Many topics can be found on the Internet with Gopher. However, if the user has to jump from menu to menu and through thousands of useless pieces of information to find pertinent information, he/she will likely never find the information that is needed; thus, Gopher would appear to be a useless Internet tool.

How Do I Search and Find Information with Gopher?

Without a search tool, Gopher would be very difficult to use for finding specific information. Luckily, Gopher has help called VERONICA. Veronica stands for **V**ery **E**asy **R**odent-**O**riented **N**et-wide **I**ndex to **C**omputerized **A**rchives and is a search engine (tool) for Gopher. VERONICA allows a user to search Gopher sites by key word for individual items or directory names. Figure 4.2 shows a VERONICA search screen.

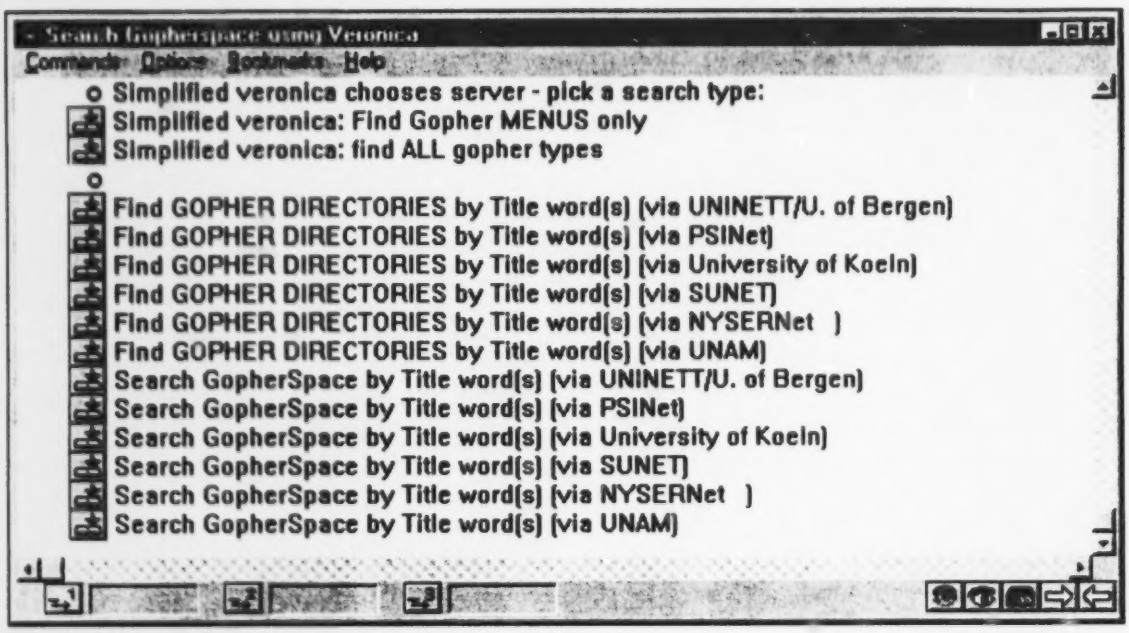
Search Gopherspace using Veronica
Commands Options Bookmarks Help
Simplified veronica chooses server - pick a search type:
Simplified veronica: Find Gopher MENUS only
Simplified veronica: find ALL gopher types
Find GOPHER DIRECTORIES by Title word(s) (via UNINETT/U. of Bergen)
Find GOPHER DIRECTORIES by Title word(s) (via PSINet)
Find GOPHER DIRECTORIES by Title word(s) (via University of Koeln)
Find GOPHER DIRECTORIES by Title word(s) (via SUNET)
Find GOPHER DIRECTORIES by Title word(s) (via NYSERNet)
Find GOPHER DIRECTORIES by Title word(s) (via UNAM)
Search GopherSpace by Title word(s) (via UNINETT/U. of Bergen)
Search GopherSpace by Title word(s) (via PSINet)
Search GopherSpace by Title word(s) (via University of Koeln)
Search GopherSpace by Title word(s) (via SUNET)
Search GopherSpace by Title word(s) (via NYSERNet)
Search GopherSpace by Title word(s) (via UNAM)

Figure 4.2 - VERONICA search screen

VERONICA is usually found in a directory directly connected to the home Gopher which must first be accessed when starting Gopher. It could be listed with its own VERONICA directory or be listed in another directory called something like *Other gophers and information servers*. Figure 4.3 shows the directory listing for the VERONICA search engine.

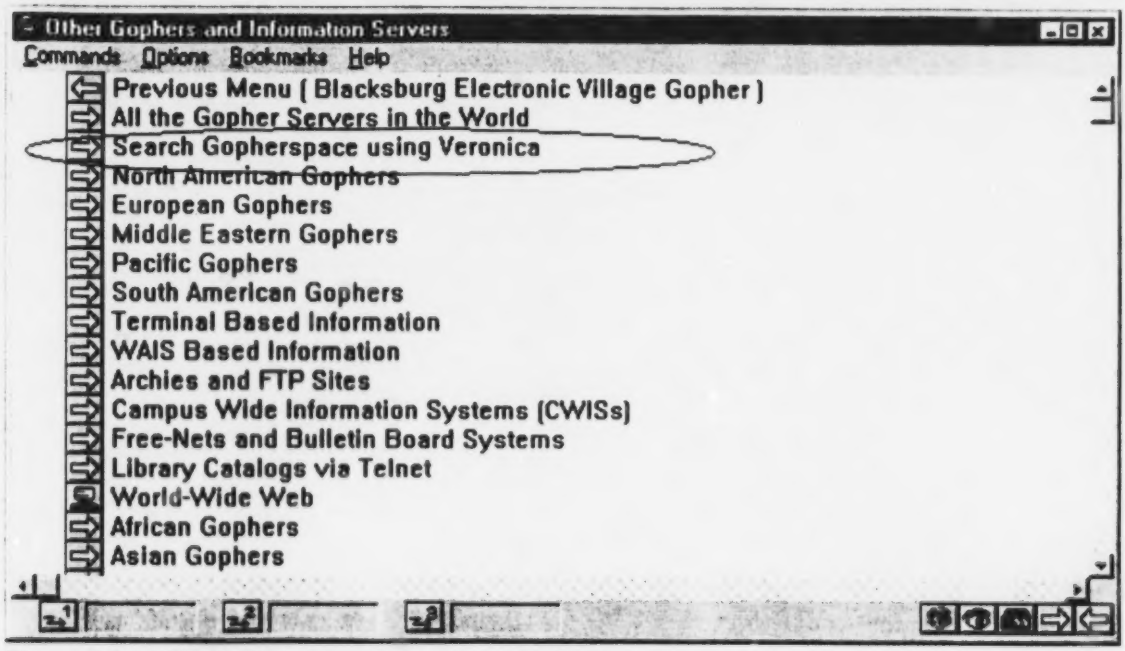

Figure 4.3 - VERONICA (on a directory in Gopher)

How Do I Search with VERONICA?

Using VERONICA is a simple procedure. First, find the directory labeled *Search gopher space using VERONICA* (see Figure 4.3). Then choose the appropriate search method and location—search by directory or search by key word(s). When choosing a search method and location, please try to choose the closest computer system to your location to reduce the load on the Internet. For example, if one is living in the United States and doing a Gopher search, he/she would not want to choose *Search directories at University of Koeln*. It would be better to Search directories at *SUNET* (see Figure 4.4). If a search request returns the message "too many connections try again soon," this means that the computer system that one is trying to use has too many people already on-line. Do as the computer suggests and try again in a little while, or choose another computer site that may not be as busy.

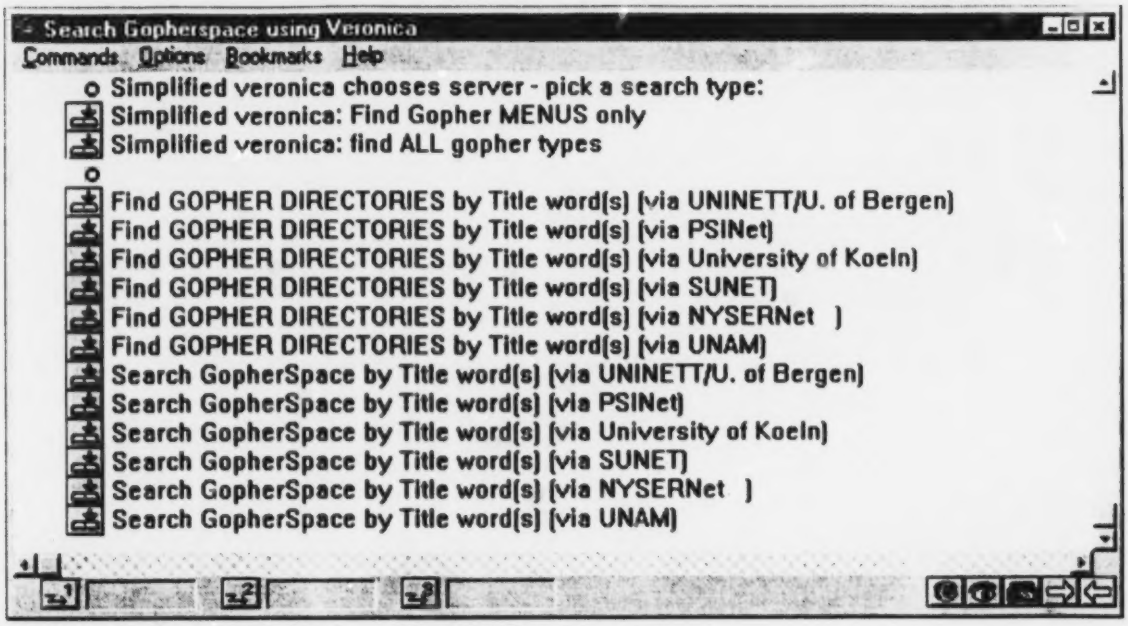
Search Gopherspace using Veronica
Commands Options Bookmarks Help
Simplified veronica chooses server - pick a search type:
Simplified veronica: Find Gopher MENUS only
Simplified veronica: find ALL gopher types
Find GOPHER DIRECTORIES by Title word(s) (via UNINETT/U. of Bergen)
Find GOPHER DIRECTORIES by Title word(s) (via PSINet)
Find GOPHER DIRECTORIES by Title word(s) (via University of Koeln)
Find GOPHER DIRECTORIES by Title word(s) (via SUNET)
Find GOPHER DIRECTORIES by Title word(s) (via NYSERNet)
Find GOPHER DIRECTORIES by Title word(s) (via UNAM)
Search GopherSpace by Title word(s) (via UNINETT/U. of Bergen)
Search GopherSpace by Title word(s) (via PSINet)
Search GopherSpace by Title word(s) (via University of Koeln)
Search GopherSpace by Title word(s) (via SUNET)
Search GopherSpace by Title word(s) (via NYSERNet)
Search GopherSpace by Title word(s) (via UNAM)

Figure 4.4 - Search SUNET (on a VERONICA directory)

When a request is completed, another menu listing is received for all the references to the key word(s) that you entered. This search could result in 12 or 12,000 items returned as located. Depending on the Gopher system, it will only display the first 100 items or so, and the rest will be identified as the very last item on the list as *11,900 other items matched your request.* Another 100 or so of these items can be seen by selecting this last menu item. This search method can provide users with the important information and computer locations they need. Once these important sites are found, how does a user remember how to return to desired information?

How Do I Return to the Important Places I Found?

Gopher application creators have also thought of this need and have the remedy. Many Gopher applications allow users to set *Bookmarks*. Bookmarks can be linked to individual items, such as documents, or to entire menu locations, such as the United States Department of Education Gopher system (*gopher.ed.gov*).

To set bookmarks to keep documents or menus, users must choose **set bookmark** from the menu, only after they have accessed the desired document or menu. Bookmarks can be saved as the default bookmarks (main bookmark file) or as separate bookmark files. For example, a user may want a bookmark file for applicable research locations and one for general reference locations as well as one for job announcements (such as the Chronicle of Higher Education and others). Bookmarks help users keep track of all the interesting and important Gopher sites. Figure 4.5 displays a bookmark listing.

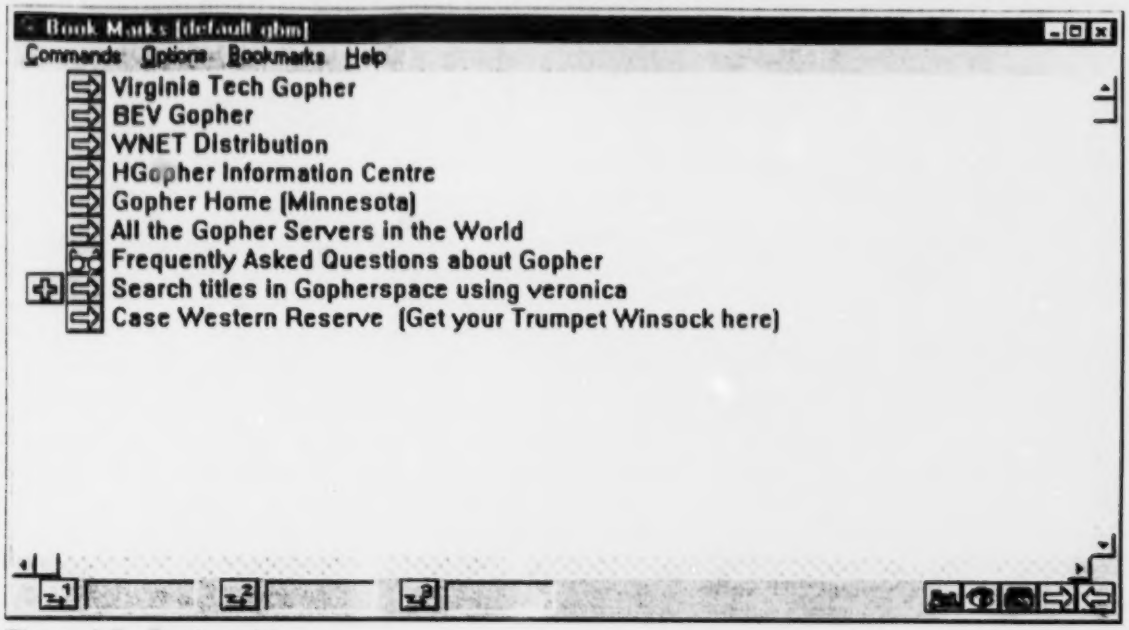
Book Marks [default.gbm]
Commands Options Bookmarks Help
Virginia Tech Gopher
BEV Gopher
WNET Distribution
HGopher Information Centre
Gopher Home (Minnesota)
All the Gopher Servers in the World
Frequently Asked Questions about Gopher
Search titles in Gopherspace using veronica
Case Western Reserve (Get your Trumpet Winsock here)

Figure 4.5 - Bookmarks

How Do I Retrieve Files and Access Other Computer Systems with Gopher?

Different Gopher menu items are displayed with different icons, or graphic pictures, depending on the type of items they represent. Figure 4.6, identifies several different types of menu icons.

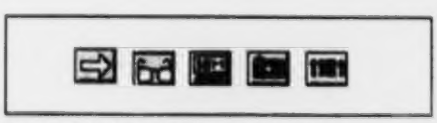

Figure 4.6 - Gopher menu icons

Arrow icon: represents more information located within this icon--another menu level
Eye Glasses icon: represents a text file (in ASCII format)
Computer icon: represents a computer system that can be accessed by Telnet/TN3270
Camera icon: represents a graphic file
1101 icon: represents a binary file (such as an executable file)

To access one of these files or computer systems, select the item desired. Gopher (if configured correctly) will download the file and start the appropriate application to display the file. For example, if a text file is selected, it would be downloaded to the computer and displayed by Windows Notepad. After the file is displayed by Notepad, the user can

save the text file to a disk or the hard drive the same way that one would normally save a file in Notepad—choose *File* and *Save* from the Notepad main menu. Graphic icons work in the same way. A graphic would be displayed by its appropriate application and could then be saved as a normal file. To access computer systems, Gopher will start the Telnet or TN3270 application (depending on the type of computer system that is being accessed), if it is installed on the computer, and the user will see a log-in screen for that remote computer or a menu if it is a library computer system. Most entry computer screens have directions, so please read them carefully; they will provide instruction on how to navigate on that specific computer system.

Note: If an interesting Gopher site is found, it can be stored as a bookmark so it can be located later. This is particularly helpful when relocating computer databases and library systems that one uses frequently.

Can I Access Gopher from a Mainframe-based Computer System?

Yes! Most mainframe computer systems have Gopher application software available. This type of system will look different from the one displayed previously. It may have more limited capabilities and will likely not be as easy to access since it is not in a GUI (Graphical User Interface) environment. One may also be required to know or remember actual computer site addresses, which could become overwhelming. If possible, use a graphical user interface-based application. If a GUI-based application is not available, a command-driven, mainframe-based Gopher application would be better than nothing. Contact the mainframe computing center personnel for specific information on how to use the Gopher application. Figure 4.7, shows the display of a mainframe-based Gopher menu.

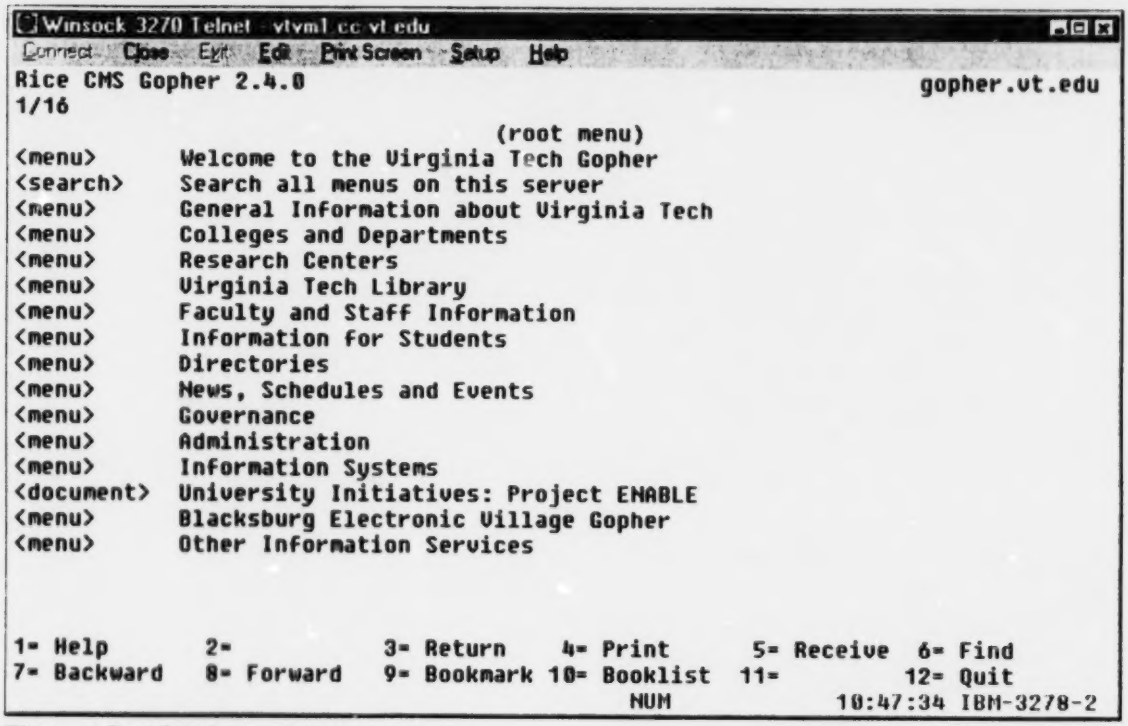

Figure 4.7 - Mainframe Gopher screen

Gopher Exercises

1. Pick or assign a city and state. Find weather forecasts for your area. Give a report of the weather in your assigned city and state, and give the weather forecast as though you were a television weather person.

2. Use VERONICA to research an issue or topic for a research report. Find five articles related to your topic. Save the files/articles to disk, or print them for later use.

3. Use Gopher to connect to other computer systems, libraries, databases, etc., via TELNET for research purposes. Find three books or articles for your report/research. If you find book references, print the references, and visit the library to get the book(s) needed.

4. Use Gopher to locate and download the most current version of a shareware virus-checking program such as "F-prot." If the file is compressed (zipped), decompress the file, and check your machine for viruses.

5. Use Gopher to locate and download graphics for a research report or desktop publishing project. Find and use at least five graphics for your project. Set bookmarks at the locations of the graphics for later reference.

Chapter 5

File Transfer Protocol - FTP

What is FTP?

FTP, File Transfer Protocol, is what its name implies--a means by which a computer user can transfer files across the Internet among remote computer systems. This transfer, however, can become complicated since MS-DOS compatible computers are accessing Macintosh systems that are accessing UNIX-based systems, etc. Each computer operating system has its own peculiarities, file naming conventions, and directory structures. FTP allows different computer systems to communicate and transfer files by using a standard language or protocol.

What Can You do with FTP?

The main activity associated with FTP is the transfer and manipulation of files on different computer systems. These files can be binary data files, text (ASCII) files, or executable files. Many files are actually one file that contains many files in a compressed mode, using a compression software such as PKZIP. This compression software allows the distributor to combine all of the program files for an application into one compressed file, which can be downloaded to an individual's computer and decompressed to reveal the many files contained therein.

FTP allows users to access many remote computer systems to retrieve and occasionally unload or send/store files. There are many sites on the Internet that are file archive sites where a computer operator can access and retrieve thousands of shareware programs and other interesting files. One popular site is the Oakland archives at ***oak.oakland.edu***. The different FTP sites can be accessed anonymously (most used method); this allows a user limited access to the remote computer system or through a regular login procedure with the appropriate password. When a user logs into a computer system anonymously, she/he will have limited computer access. Anonymous access usually limits a user to only certain directories on the remote computer, and only provides download privileges to the user. When logging into a FTP server anonymously, enter the following information as requested:

Login prompt >	**anonymous** (type in the word anonymous; this tells the computer to give you anonymous computer privileges)
Password prompt >	Your e-mail address, for example: brownhf@vtvm1.cc.vt.edu

If a user has higher privileges on a FTP computer server, she/he will usually have to follow a standard computer login procedure that requests a specific user I.D. and password. Higher-level access privileges usually offer the user the ability to create and remove

directories and upload or download and rename files within a specific location (directory) on the computer system. Faculty and staff at universities will sometimes have higher privileges on FTP servers, especially when storing class files on the computer system for students.

What Does a FTP Screen Look Like?

Figure 5.1 displays a typical FTP screen. The left side of the screen displays the user's computer information. The right side of the screen displays information for the remote computer--the computer that the user is accessing. To navigate around in this screen, click the different directories or folders until you locate the file(s) for which you are searching on the remote computer. Directories on the computer can be changed by clicking on the different directory levels in the hierarchy. The performance of clicking on directories to navigate assumes that the user has a familiarity with Windows-based software and how to navigate through the directory hierarchy in a windows-based application.

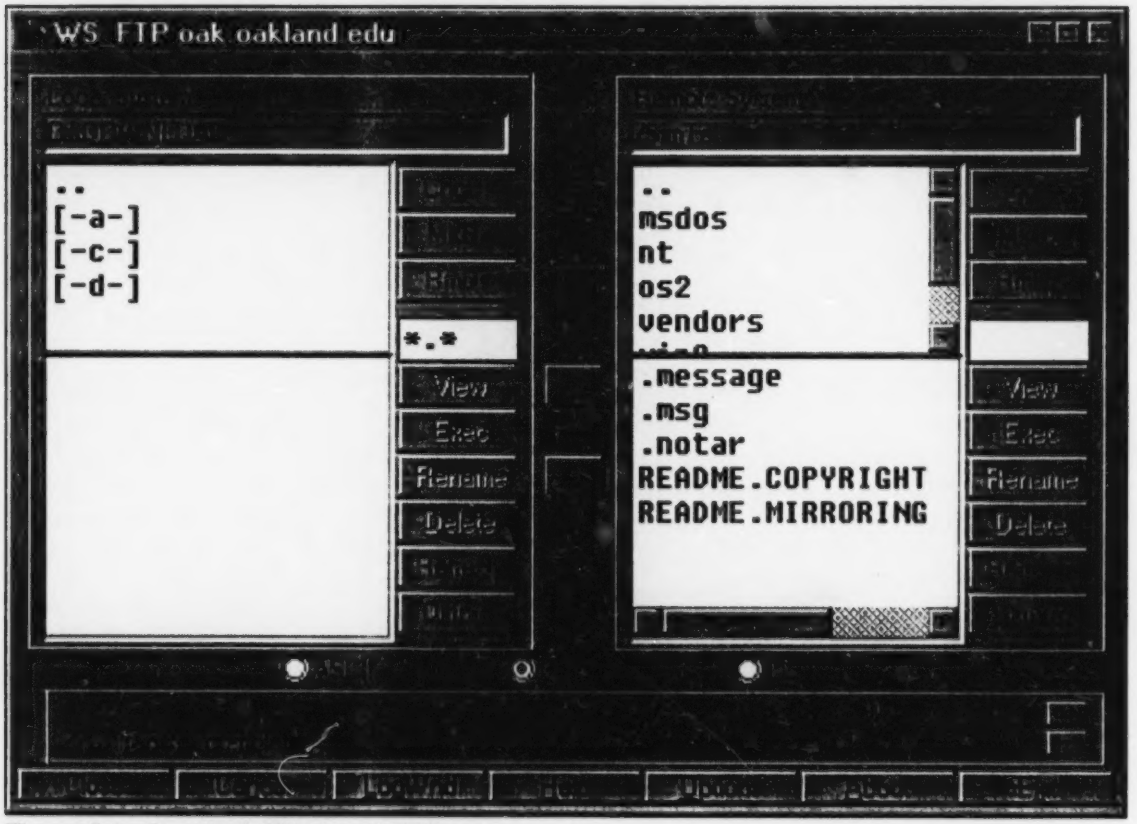

Figure 5.1 - Standard (Windows) FTP screen

The right and left sides are broken into two separate display boxes, one above the other, on each side. The top box displays the directories, and the bottom box displays any files within the current directory. For example, the user in Figure 5.2 is in the **SimTel/msdos/virus** directory at oak.oakland.edu, and the files in that directory are **fixcrime.zip**, **fixutil6.zip**, **fp220.zip**, **fshld15.zip**, etc.

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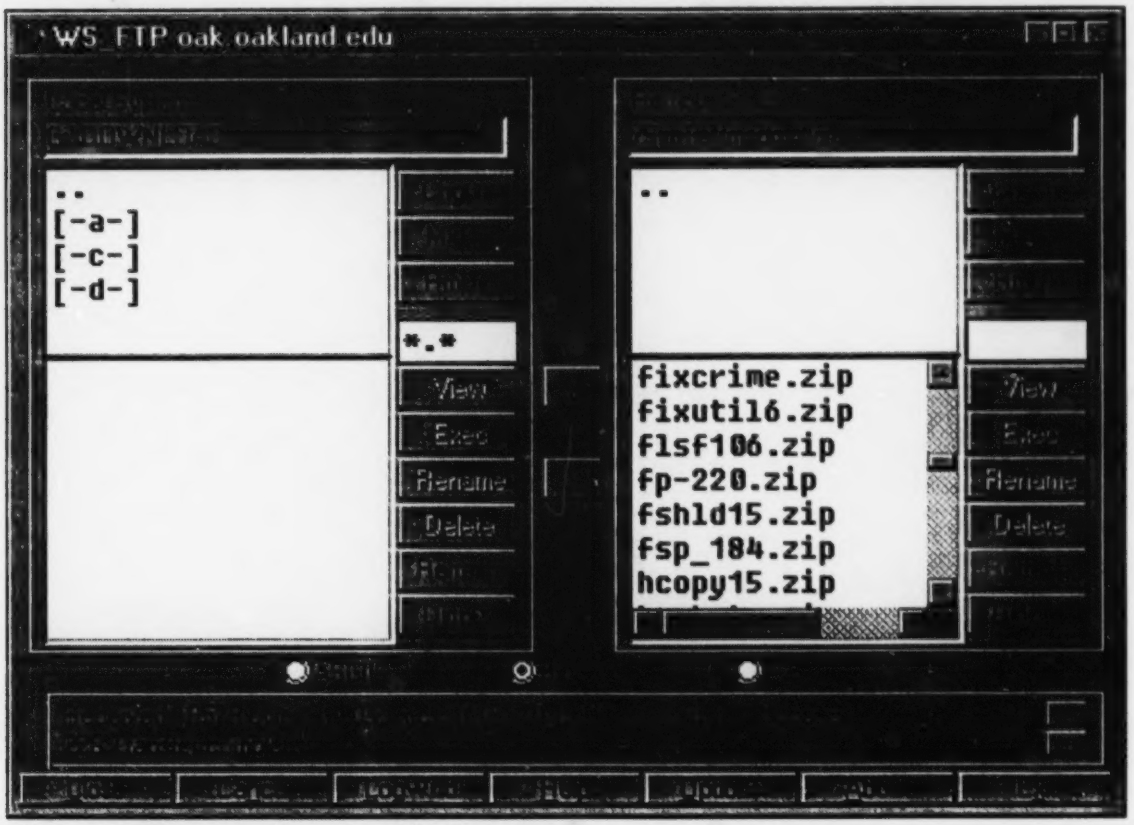

Figure 5.2 - FTP accessing oak.oakland.edu

How Do I Navigate with or Use a FTP Application?

First one needs to know the address of the computer to be accessed and whether it is an anonymous FTP site. The address identifies the computer to be accessed; for example, oak.oakland.edu for the Oakland archives. Enter this address, and the computer will contact and access the FTP site. Depending on the FTP application, it will log the user into the remote computer, or the user may have to enter the user I.D. and password information, as listed previously.

Once connected, navigate through the various levels of directories. Most directories have specific names that relate to their contents, such as EDUC for educational files or VIRUS for virus-related files (virus checking programs). **INDEX** and **README** files also appear. These files should be viewed or downloaded and read with a word processor (usually in ASCII form). They contain important information about the computer system being accessed (readme) and the file names and descriptions of files located in the current

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directory in the **INDEX** files. These index files can contain the index of only individual directories or the entire computer file archive.

Once a desired file is located, either by the index file or random searching, the user can download the file. In the application displayed in Figure 5.3, the user only has to select (click on) the desired file and select the left-pointing arrow in the middle of the screen, i.e., the one pointing toward the user's computer. This action tells the computer to copy the file selected from the right side (remote computer) to the left side (user computer). To upload files, the user would do the reverse and press the right-pointing arrow.

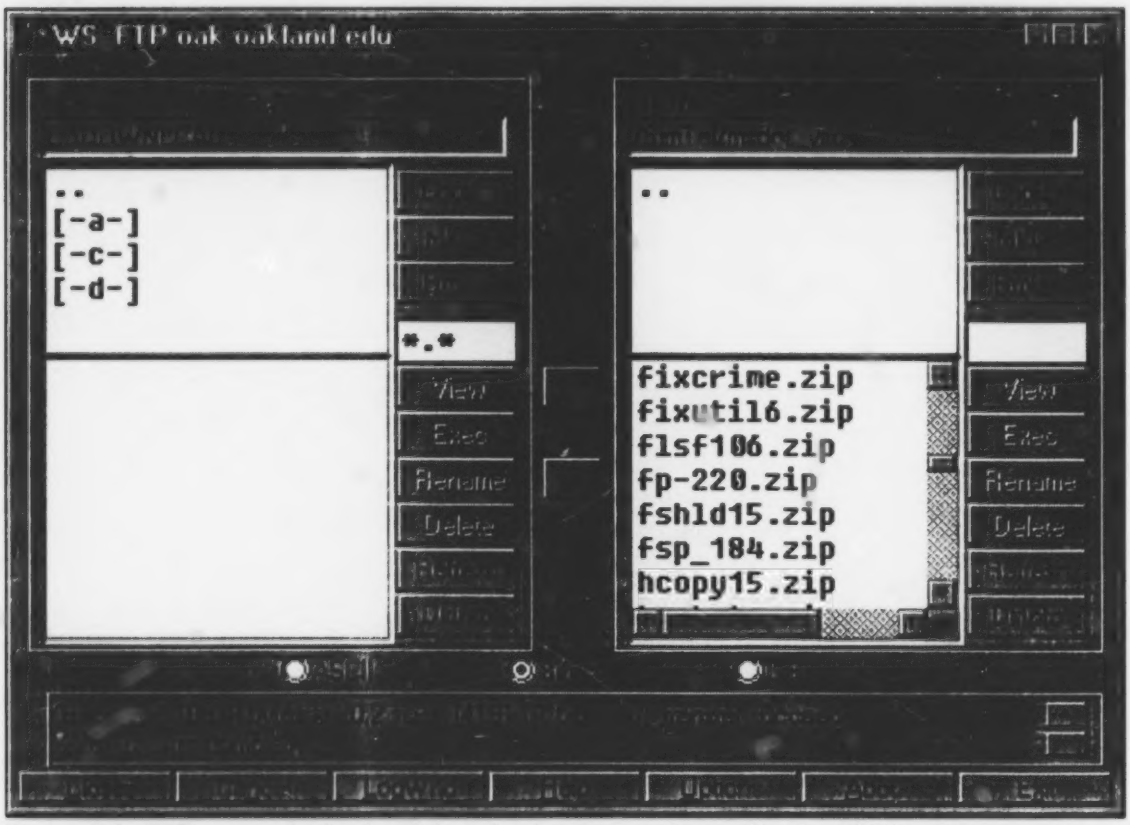

Figure 5.3 - FTP screen (upload and download arrows are located in the middle of the screen)

File Compression

Individual files are often a collection of files that have been compressed with such utilities as PKZIP or ARJ. If the user does not recognize the file extension on the file downloaded

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as a file that can be accessed, such as a .EXE, .COM, .BAT, .GIF, .TXT, etc., it may be compressed. See the index file for help; it will often provide necessary information. If the file ends in .ARJ or .ZIP, the file is compressed. Download the appropriate compression/decompression software to open the files (the software should be available on the same computer from which the file was retrieved).

File Names and Directory Structure Differences

Many FTP sites are UNIX-based computer systems. These systems use the forward slash "/" to identify and change directories. For example, cd /education/hbrown would change directories to the education and hbrown subdirectory. MS-DOS-based systems use the backslash "\" such as \education\hbrown. UNIX systems will also allow for different file-naming conventions. Thus, when downloading files, be sure to give the file an eight-character name with a three-character extension DOS name. Often the FTP software will automatically take care of these concerns by assigning navigation commands to buttons and truncating file names. UNIX systems are also case sensitive, so be careful what characters are capitalized when entering information on this type of system. For example, "VIRUS" is not recognized the same on a UNIX system as "Virus."

How Do I Find FTP Sites?

Find FTP sites and files with an application called **ARCHIE.** Archie is a search engine created to search FTP sites for specific files or directories. If a user is searching for virus files, an Archie search could be conducted to find directories named Virus or any file name or directory with the word "virus" in it. Archie searches can be specific or general. Figure 5.4 shows an Archie screen with search completed.

Figure 5.4 - Archie screen (search complete on keyword "virus")

Unlike Gopher's VERONICA, however, the search will only produce a list of addresses and directory locations. The user must then take this information and use the FTP client software application and insert the site address and directory information to find the desired file. VERONICA, remember, produces the actual links to directories and other computer systems, or the actual document that is being searched. Archie, though limited, does provide the needed information on how and where to locate hard-to-find files. Some Archie systems will allow users to double-click the file desired to automatically connect and retrieve the found file. Archie was more important before the introduction of web browsers and the search engines available to web browser applications. See Chapter 8 for more information on web browsers.

Is FTP Available on Mainframe Computer Systems?

Yes! FTP is available on most mainframe computer systems. Unfortunately, these systems are not as user-friendly as the windows-based systems. For more information about the differences, see Chapter 3 and the E-mail discussion of the differences between client-server and terminal-server systems.

To use FTP on a mainframe computer, contact computer center support personnel for guidelines and procedures regarding a specific system. It is similar to the aforementioned steps, but the user must type in all of the commands to navigate to the remote computer as well as issue the appropriate navigation commands, such as change directory, once on the remote system. For example, the user may have to type the following to access and find files on the Oakland archives using a mainframe-based system (Literal type is in BOLD):

At the mainframe prompt:		**ftp oak.oakland.edu**
Oakland login prompt:	user>	**anonymous**
Oakland pass prompt:	password>	your e-mail address
Oakland UNIX prompt:		**List** (to list the files and directories on the system)
Oakland UNIX prompt:		**CD/education/hbrown** (change directories; notice the forward slashes needed for the UNIX-based system)

The above procedure is a simple example of the many commands that a non-windows user would have to enter to perform the same operations as clicking on a couple of buttons. Transferring files becomes even more complicated, so see computer support personnel for more information on FTP commands and instructions for using specific FTP software. Figure 5.5 shows a mainframe FTP login screen.

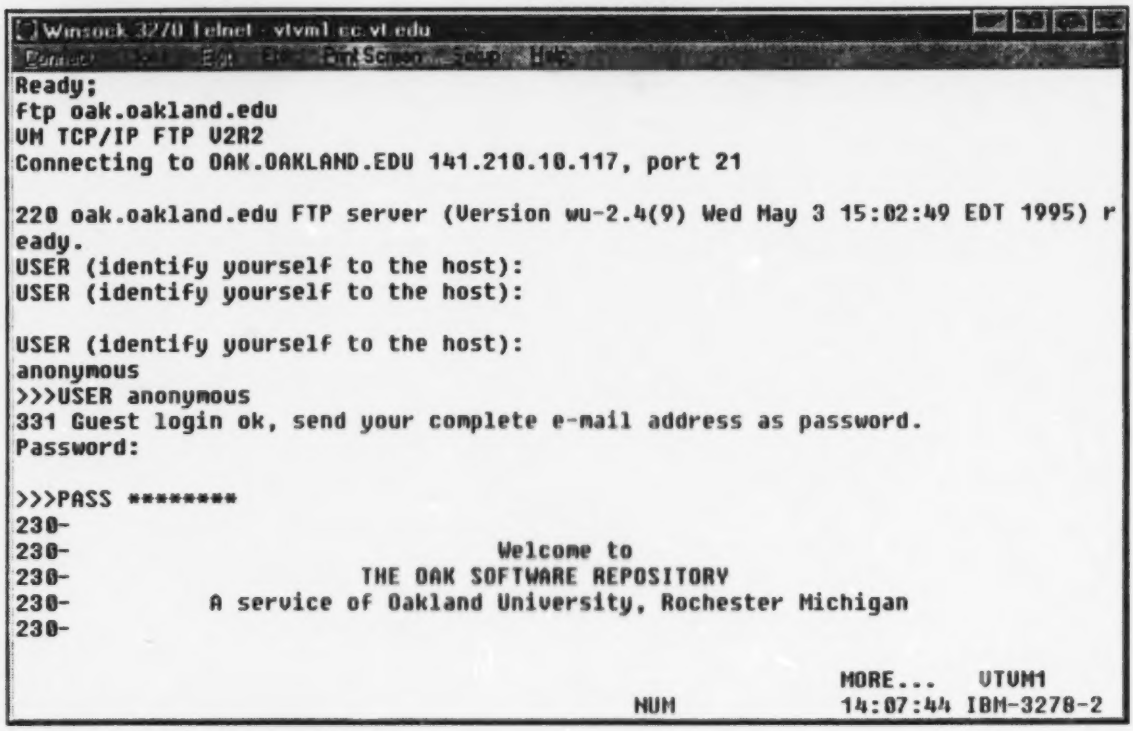
Winsock 3270 Telnet - vtvm1.cc.vt.edu
Ready;
ftp oak.oakland.edu
VM TCP/IP FTP V2R2
Connecting to OAK.OAKLAND.EDU 141.210.10.117, port 21
220 oak.oakland.edu FTP server (Version wu-2.4(9) Wed May 3 15:02:49 EDT 1995) r
eady.
USER (identify yourself to the host):
USER (identify yourself to the host):
USER (identify yourself to the host):
anonymous
>>>USER anonymous
331 Guest login ok, send your complete e-mail address as password.
Password:
>>>PASS ********
230-
230- Welcome to
230- THE OAK SOFTWARE REPOSITORY
230- A service of Oakland University, Rochester Michigan
230-
MORE... VTVM1
NUM 14:07:44 IBM-3278-2

Figure 5.5 - Mainframe FTP login

FTP Exercises

1. Log into the **oak.oakland.edu** FTP server as anonymous. Find and retrieve the current version of F-prot virus-checking software. View the **INDEX** files to find the location of the desired file.

2. Log into the **oak.oakland.edu** FTP server as anonymous. Find and retrieve the current version of PKZIP software for zipping and unzipping compressed files. View the **INDEX** files to find the location of the desired file.

3. Log into the **oak.oakland.edu** FTP server as anonymous. Find and retrieve educational software that can be used in your classroom, such as typing tutors and typing games. View the **INDEX** files to find the location of the desired file.

4. Use Archie to search for educational files. These files could be programs for recording grades, teaching subject material, or games related to the subject.

5. Use Archie to search for files on viruses or virus-checking programs. Retrieve a virus-checking program, other than F-prot, if desired.

6. If you can obtain storage on a FTP server for your class, store class files on the server, and teach students to upload, download, and maintain the storage location on the server.

7. Setup and run a FTP server, if your facilities allow.

Chapter 6

Newsgroups & Newsreaders

What is a Newsgroup and What is a Newsreader?

Newsgroups fall into a larger category of Usenet news, or Netnews. The Usenet news and Netnews are similar to a kind of distributed bulletin board system run on thousands of computers world-wide. Users of this system exchange ideas and information by "posting" or sending messages to a specific topic area, which are distributed automatically to thousands of computers around the world. **Newsgroups** are these discussion forums, which relate to a specific topic area. For example, a newsgroup may be established to allow all K-12 Business Education teachers to discuss current and future issues. These forums consist of a central computer that stores e-mail messages from thousands of users. One user can ask a question, which is posted to the newsgroup and can be read by anyone who accesses that group. Any user reading the message can send a response to the message poster. The message poster is the user who sent the original e-mail question from which the other users are responding.

Newsgroups are a good method for reaching potentially thousands of experts in a field to bring them into one discussion forum. A **Newsreader** is the software that allows a user to access the thousands of newsgroups that have been created on the Internet and post and read the messages. Binary files, such as graphic images or sound files, can be encoded and posted to the newsgroup areas. Newsreaders also allow users to download and decode the binary files in these newsgroup areas.

How Do I Access Newsgroups?

As stated previously, one can access newsgroups via Newsreader software such as the one displayed in Figure 6.1 or via web browsers (Chapter 8). This chapter will address the process of accessing newsgroups via Newsreader software. Once a user has the needed software, he/she will need to update the newsgroup lists. New newsgroups are added regularly, so occasionally one will need to update the newsgroup listing. This listing is stored on the user's computer with references to the groups that have been accessed or **subscribed** to. When a user subscribes to a newsgroup, that group is listed first in the list of thousands of newsgroups to allow for easy access. By subscribing to specific groups, users can speed up the time it takes to access important information, since they are mainly accessing only a select few of the thousands of newsgroups.

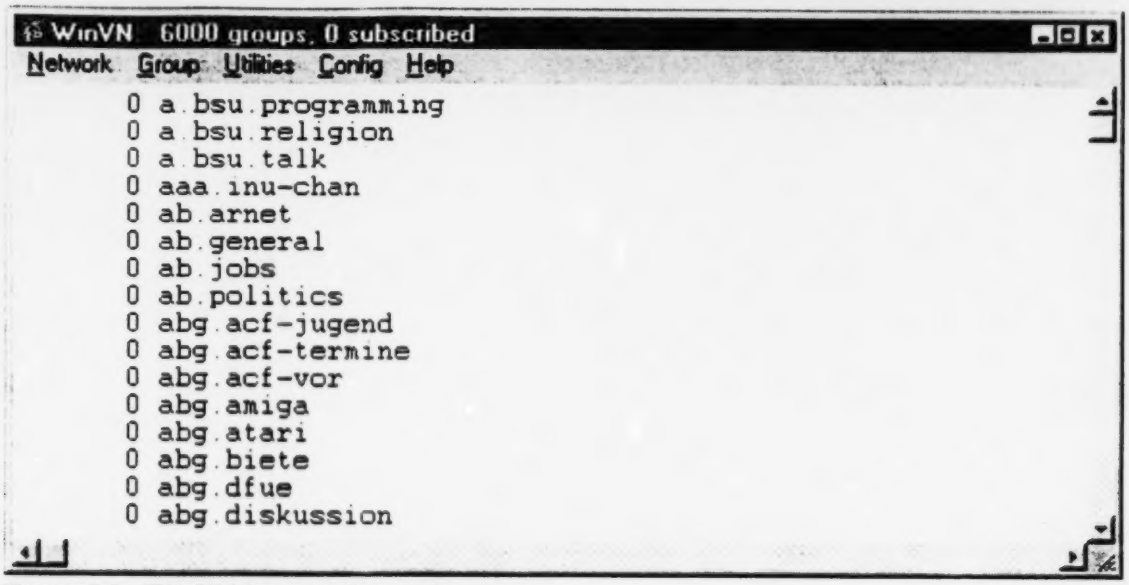

Figure 6.1 - WinVN (newsreader) main screen

How Do I Read Messages?

First, select the newsgroup to be accessed by double-clicking the appropriate name. A dialog box may appear asking how many of the most recent postings should be viewed. This dialog box will appear if the newsgroup being accessed has hundreds to thousands of postings. Choose the number to display, if appropriate, and the screen will display a listing of the message headers for all, or the number selected, of the most recent messages. The headers will contain the sender, the message subject, date, the type (JPEG and GIF are binary graphic files), and the number of lines in the message as shown in Figure 6.2. Use the scroll bars to display the other messages not on the screen. To read a message, double-click on the message header of the message to be viewed. The complete message will appear on the screen. If the screen appears with garbage characters, it is likely a binary file as discussed previously and will need to be decoded.

How Do I Post (Send) Messages?

Posting or sending messages to newsgroups can be done in several ways. A user can choose to send a new message, reply to a previous message, or send an e-mail directly to the person who posted the message.

To send a new message, the user would choose **POST** from the menu and then specify the newsgroup, enter the message subject and the contents of the article, and send the

completed article to the Usenet server. The Usenet sever would then distribute the new message to all the Usenet computers on the Usenet computer network.

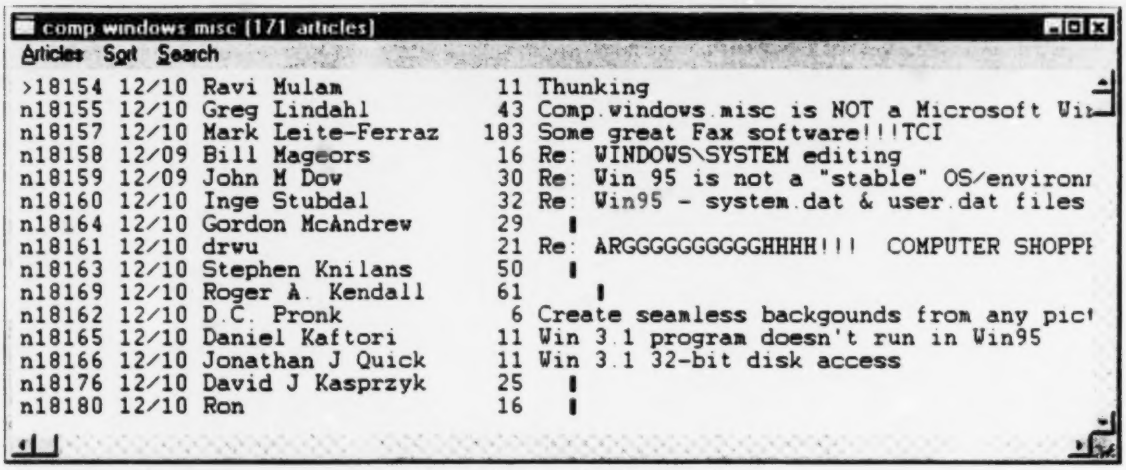
comp.windows.misc (171 articles)
Articles Sort Search
>18154 12/10 Ravi Mulam 11 Thunking
n18155 12/10 Greg Lindahl 43 Comp.windows.misc is NOT a Microsoft Wi
n18157 12/10 Mark Leite-Ferraz 183 Some great Fax software!!!TCI
n18158 12/09 Bill Mageors 16 Re: WINDOWS\SYSTEM editing
n18159 12/09 John M Dow 30 Re: Win 95 is not a "stable" OS/environ
n18160 12/10 Inge Stubdal 32 Re: Win95 - system.dat & user.dat files
n18164 12/10 Gordon McAndrew 29
n18161 12/10 drwu 21 Re: ARGGGGGGGGGGHHHH!!! COMPUTER SHOPPI
n18163 12/10 Stephen Knilans 50
n18169 12/10 Roger A. Kendall 61
n18162 12/10 D.C. Pronk 6 Create seamless backgounds from any pic
n18165 12/10 Daniel Kaftori 11 Win 3.1 program doesn't run in Win95
n18166 12/10 Jonathan J Quick 11 Win 3.1 32-bit disk access
n18176 12/10 David J Kasprzyk 25
n18180 12/10 Ron 16

Figure 6.2 - Newsgroup "comp.windows.misc" listing file headers

To reply to an existing message, the user would choose the message and select **REPLY TO** from the menu. The original message would appear with the subject line identical to the message that is being replied to, but with **re:** placed in front of the previous subject line. This helps other newsgroup readers to follow an ongoing conversation or topic being discussed. After the old message appears, users should include their responses to the specific text of the original message. Any unwanted or unimportant previous text material should be deleted. Include only the pertinent parts of the original message.

To send an e-mail directly to the composer of the original message, the user should choose **COMPOSE MAIL** from the menu. This will cause the computer to display a standard e-mail window with: To:, From:, Subject:, and an area in which to include the body of the message. The computer should include all of the header information except the subject. The user should include a short, meaningful subject for the message. The user should then enter the body of text that will comprise the bulk of the message. The main difference between posting and e-mail response is that posting goes to the entire Usenet community, whereas e-mail goes only to one (or more than one, as specified) user.

The ease of posting newsgroup articles can cause inappropriate articles to be sent to the network. Users should keep in mind the following Usenet Etiquette, or Netiquette, for using the Usenet news system.

An article is considered inappropriate if it:

- √ contains NO useful information or ideas.
- √ is sent to inappropriate newsgroup(s).
- √ is intended for an individual, rather than the entire Usenet group.
- √ contains rude or insulting remarks or language.

Please compose articles thoughtfully. Remember that the cost of maintaining and transferring information among these thousands of Usenet-linked computers is high. Any inappropriate or useless information adds to the high cost. If one needs to test his/her posting capabilities, one should not use an active newsgroup. To test posting, look for newsgroups with the word "test" in their names. These test newsgroups are established for this purpose. Use common sense when accessing the Internet, and be courteous.

How Do I Decode Binary Files in Messages?

As mentioned previously, binary files such as graphic files, sound clips, or any other type of non-ASCII file are occasionally sent to Usenet newsgroups. Since Usenet primarily operates with ASCII files, binary files must be converted to a ASCII format. The typical conversion method is UUENCODE, which is used so that a diverse group of users can access the file. Using WinVN, the software used in the examples in this chapter, it is easy to decode a file. The user should select the desired file or group of files and choose **Decode a file** from **FILE** under the main menu (see Figure 6.3). The file(s) will then be read and decoded line by line, and the resulting binary file will be stored on the computer in its original format, i.e., graphic, sound, movie, etc.

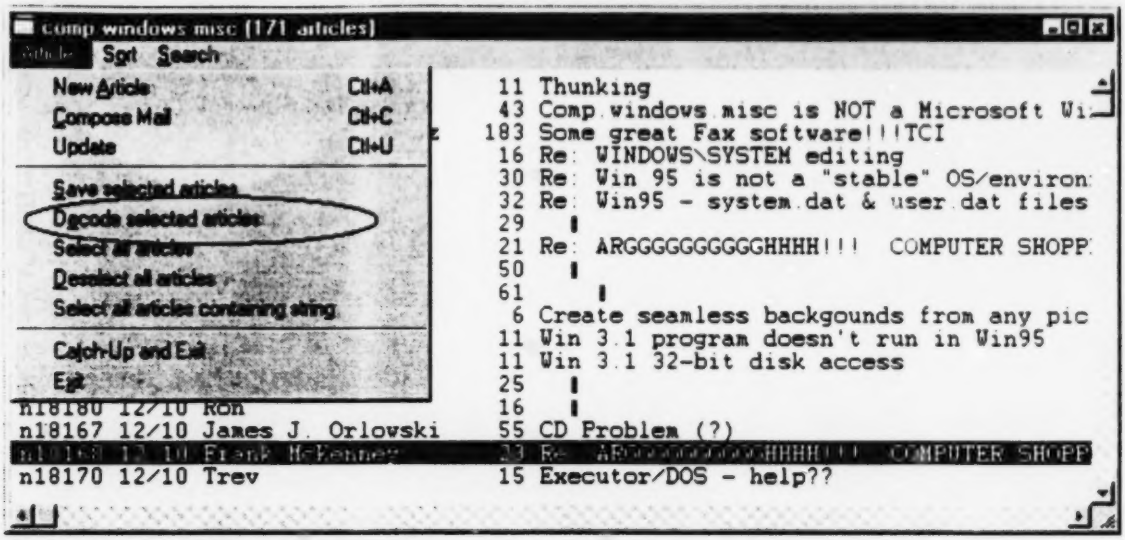

Figure 6.3 - Decoding a file, menu item

Newsgroup Exercises

1. Have the class start its own Newsgroup by preparing the appropriate proposal and submitting it to the computer services department. Have the students develop their own group protocol by establishing the appropriate rules and regulations that should govern the newsgroup as well as the penalties (such as revocation of privileges for rude posters) for inappropriate messages being posted to the newsgroup.

2. Research computer topics by communicating with **COMP** newsgroups, i.e., computer-related newsgroups. Compile your research. Report your findings in an oral or written report.

3. Identify a computer problem currently affecting your class, and pose the problem to the appropriate newsgroup. Monitor the newsgroup for a response to your problem.

4. Retrieve a graphic file or executable file (binary) from an appropriate newsgroup (decode article/file). Use a graphic in a desktop publishing class project.

5. Research a topic, historical or other, by posing interview-style questions to appropriate newsgroups. Write a report to compile the information received.

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Chapter 7

Telnet & TN3270

What is Telnet & TN3270?

Telnet is an application that allows a user to access and log into a remote computer system. This remote computer system could be a computer database, library card catalog system, or even a campus mainframe computer, which may contain the user's e-mail. TN3270 is very similar to Telnet; however, it is used to access computer systems using the IBM 3270 terminal emulation. This emulation is often used with IBM mainframe computer access.

These applications are most commonly used in conjunction with the other software tools discussed, specifically Gopher and web browsers. As discussed in Chapter 4, on Gopher software, Gopher allows access to other computer system databases and library systems. The icons on the Gopher menus will display what type of computer system will be accessed. A computer icon displaying 3270 or "IBM" represents a TN3270-based system, and a computer icon without 3270 represents a computer system that will be accessed with the standard Telnet software. Telnet and TN3270 *are* separate applications that Gopher and web browsers must access. When the Gopher and web browsing software are configured, the user must enter the directory path and executable file names for the Telnet and TN3270 software applications.

What Do They Look Like?

Telnet and TN3270 software will resemble the computer system that is being accessed, except for the special menu and button bar items that allow a user to print, save, configure, connect, and disconnect from the remote computer systems. Figure 7.1 shows a Telnet screen displaying a connection to the Virginia Polytechnic Institute and State University library system. Figure 7.2 shows a TN3270 screen that is accessing the mainframe computer at Virginia Polytechnic Institute and State University.

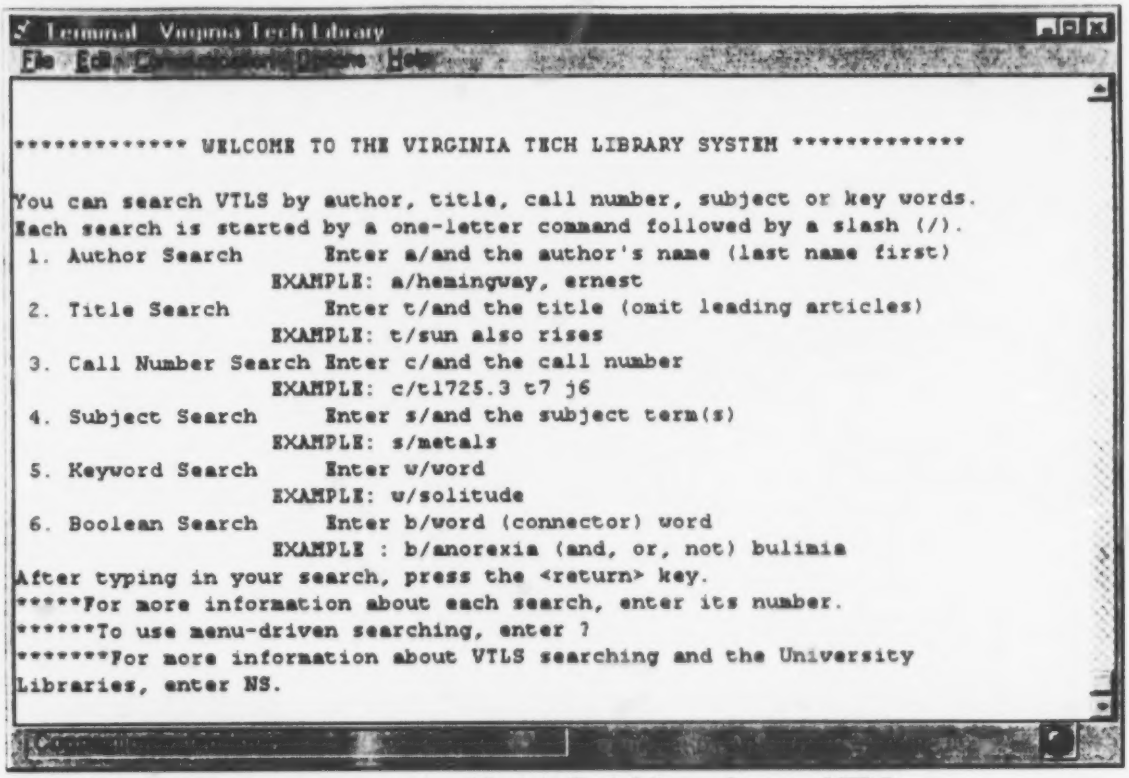
Terminal - Virginia Tech Library
File Edit Connect Options Help
********** WELCOME TO THE VIRGINIA TECH LIBRARY SYSTEM **********
You can search VTLS by author, title, call number, subject or key words.
Each search is started by a one-letter command followed by a slash (/).
1. Author Search Enter a/and the author's name (last name first)
EXAMPLE: a/hemingway, ernest
2. Title Search Enter t/and the title (omit leading articles)
EXAMPLE: t/sun also rises
3. Call Number Search Enter c/and the call number
EXAMPLE: c/tl725.3 t7 j6
4. Subject Search Enter s/and the subject term(s)
EXAMPLE: s/metals
5. Keyword Search Enter w/word
EXAMPLE: w/solitude
6. Boolean Search Enter b/word (connector) word
EXAMPLE : b/anorexia (and, or, not) bulimia
After typing in your search, press the <return> key.
*****For more information about each search, enter its number.
******To use menu-driven searching, enter ?
*******For more information about VTLS searching and the University
Libraries, enter NS.

Figure 7.1 - Telnet session connected to Virginia Tech Library System (VTLS)

How Do I Access a Remote Computer?

As stated previously, other Internet applications, such as Gopher and web browsers, will use Telnet and TN3270 to provide the user with access to the remote computer systems. However, if users are in a remote location, such as at another university, and would like to access their electronic mail on their school's computer with the remote university computer, the users would Telnet from the remote computer to their school's computer system and check e-mail as if they were there. This is one of the benefits of Telnet and TN3270--the ability to check e-mail from a remote computer or access a computer remotely. The primary benefit, however, is access to remote computer system databases, such as ERIC, and remote library systems such as the Library of Congress and university library systems.

Figure 7.2 - TN3270 session connected to the mainframe VTVM1

To access a remote computer, the user will use Gopher or a web browser to locate and then access the computer. Another way is to enter the complete address to the remote computer in the Telnet or TN3270 application and access the computer system directly. When the users connect with the remote system, they must sometimes enter a user I.D. and password. If user I.D.s and passwords are required, these are likely restricted access computer systems; however, many systems will often allow "guest" access. Read the computer login screens carefully to determine how to login properly. Gopher menus and web browsers will also often provide clues as to how to access restricted systems as guests. Read on-line documents that may appear in the same directory to obtain clues to the login procedure. See Figure 7.3 for an example of a typical remote computer login screen.

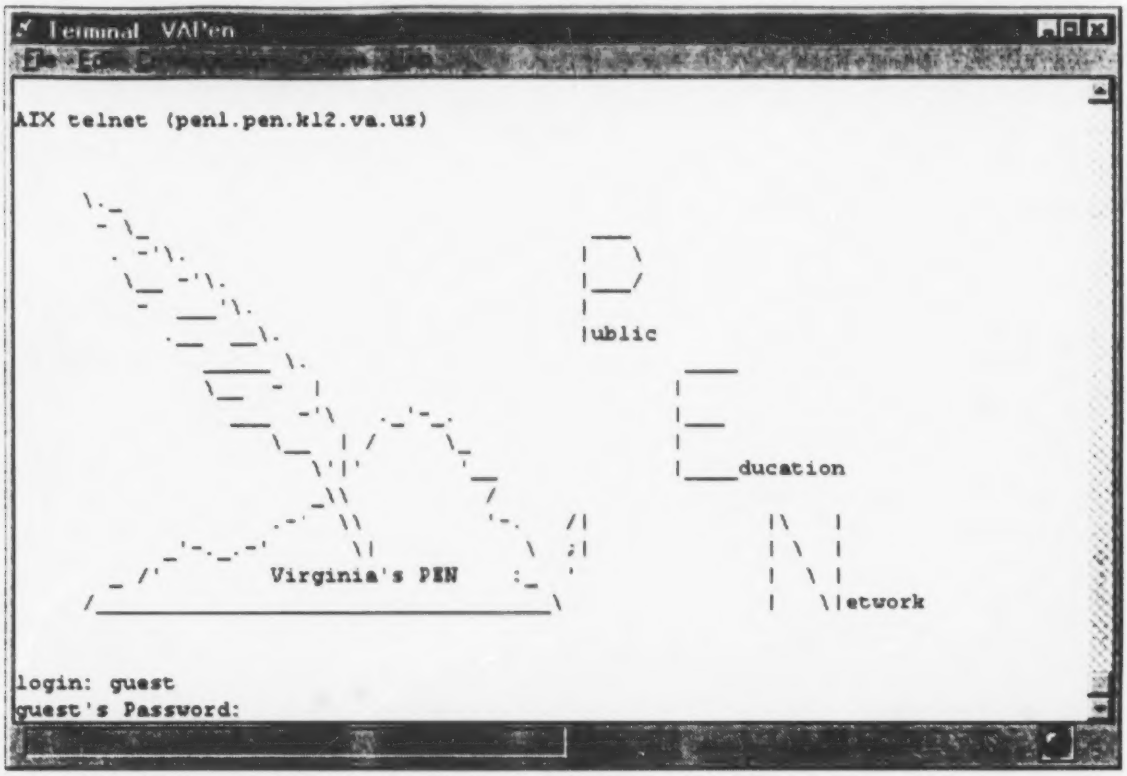

Figure 7.3 - Remote login screen for Virginia's PEN (telnet session)

What are Terminal Emulations?

Terminal emulations are somewhat synonymous with languages. Terminal emulations are the "language" in which the remote computer system can communicate. For example, when logging into a remote computer, the user may be asked for the terminal emulation, wherein the user has to enter VT100, IBMPC, 3270, etc. Many computer systems will communicate in the standard VT100 emulation. If asked for a terminal emulation, and you are not sure, enter VT100. This is usually a safe choice and will produce at least adequate results. If you enter a hard return (press the <ENTER> key), the remote system will often load the default emulation (often times VT100) or will produce a list of choices from which to choose an emulation. As stated previously, look for login information on corresponding Gopher menus or web browser page access locations.

Telnet/TN3270 Exercises

1. Log on to an Electronic Bulletin Board (BBS) system that has modem and Internet access. Compare the interface with other telnet sites. Discuss the differences and similarities of the system's interfaces.

2. Use telnet to log into a library computer system for research purposes (find the library telnet address with another Internet tool such as Gopher). Find and record five references.

3. Use telnet to log into another computer system. Login as *Guest* if possible, and browse the system. Discuss the ease or difficulty of navigating that system.

4. Use TN3270 to log into a library computer system for research purposes (obtain the library address with another internet tool such as Gopher). Find and record five references.

5. Use TN3270 to log into another computer system. Login as *Guest* if possible, and browse the system. Discuss the ease or difficulty of navigating that system.

Chapter 8

World Wide Web

What is the World Wide Web?

The World Wide Web [WWW] is a global connection of computer systems that allows for a graphical, hypertext-based navigation environment. Hypertext is text that is linked to other operations. A good example is the help feature in Microsoft Windows. When a help topic is selected and displayed, some of the text is highlighted in a color (usually green). If the user clicks the mouse on the green text, the user is instantly transported to another area of the help menu that displays information regarding the (green) Hypertext clicked. A graphical environment refers to an environment that facilitates clicking with a mouse and active buttons, on-screen display of graphics, and other features such as color of text and style (italics, bold, etc.). The WWW uses several standard features that include, URLs, HTTP and HTML.

What is a URL?

A **URL** or **U**niversal **R**esource **L**ocator is the computer site address or location of the remote computer system. URLs use computer domain names, as introduced in Chapter 3 (E-mail), to identify the computer's location on the WWW. An example of a URL would be **http://www.vt.edu**. This URL points to the WWW server at Virginia Polytechnic Institute and State University in the Education domain. Figure 8.1 shows a URL.

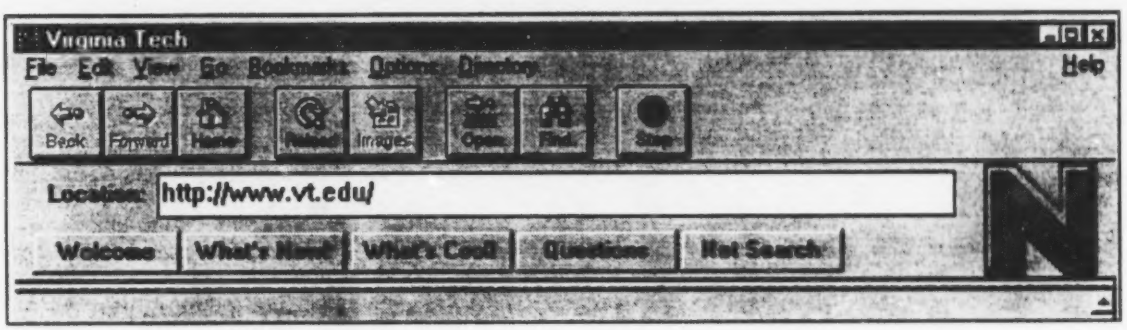
Virginia Tech
File Edit View Go Bookmarks Options Directory Help
Back Forward Home Reload Images Open Find Stop
Location: http://www.vt.edu/
Welcome What's New! What's Cool! Questions Net Search

Figure 8.1 - Universal Resource Locator

What is HTTP?

HTTP, as shown in the URL, is the protocol being used to access the remote computer system. HTTP stands for **H**yper**T**ext **T**ransfer **P**rotocol. Remember that protocols are languages that allow computers to communicate with each other.

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What is HTML?

HTML stands for **H**yper**T**ext **M**arkup **L**anguage. WWW home pages are created using the HTML language, which consists of ASCII text and special command strings to identify bold, italics, and larger text as well as the hypertext links to other computer systems. Shareware and commercial HTML programming applications are available as well as add-on templates for WordPerfect and Microsoft Word. At the time of the authoring of this guide, Microsoft was offering **Internet Assistant**, their add-on template/software, free for users to download from their WWW site at **http://www.microsoft.com**. Add-on templates are much easier to use since the user does not need to know HTML syntax. With templates, users must create only their home page just as they would create any other document, then have Microsoft Word convert and save the current document into the HTML format. This is much easier than knowing the HTML syntax and allows any computer user to quickly develop professional-looking home pages.

HTML is the programming language used to create the Home Pages on the WWW. A home page is a location on the Internet that can be accessed. When a URL is entered into the web browser software, the computer system contacts the remote computer and looks for a specific file with a .HTML extension. The web browser software converts the HTML file into a graphical environment with hypertext links and graphical images. When users are accessing different sites on the WWW, they are accessing different home pages on remote computers. The hypertext links can be set to documents stored on the remote computer, cause a movie to play, or *jump* the user to another remote computer and its corresponding home page.

For example, if one were to access the web with Netscape, he/she would see a button that says **net search**. If a user pressed this button, it would JUMP him/her to another computer system that stores links to WWW search engines. If the user chose the search engine **Lycos,** he/she would Jump to the Lycos remote computer and run a search from his/her computer. This is what is commonly called **SURFING THE NET**. Users are jumping among computer systems around the world without having to know the computer system's domain address, though they can see where they are by looking at the URL, usually displayed at the top of the web browser software. See Figure 8.2 for an excerpt from a HTML (bookmark page) file.

```
<!DOCTYPE Mosaic-Communications-Bookmark-file-1><!-- This is an automatically
generated file.
   It will be read and overwritten.
   Do Not Edit! -->
<TITLE>WNET Web Bookmarks</TITLE>
<H1>WNET Web Bookmarks</H1>
<DL><p>   <DT><H3 ADD_DATE="784432365">BEV Starting Points</H3>   <DL><p>
   <DT><A HREF="http://www.bev.net/BEVhome.html" ADD_DATE="784432365"
LAST_VISIT="0">BEV Home Page</A><DD>Main Web starting point for BEV users
<DT><A HREF="http://www.vt.edu/" ADD_DATE="784432365" LAST_VISIT="0">Va
Tech Home Page</A><DD>Main Web starting point for Virginia Tech users      <DT><A
HREF="http://www.bev.net/" ADD_DATE="784432365" LAST_VISIT="0">BEV Welcome
Page</A><DD>Welcome to the Blacksburg Electronic Village!      <DT><A
HREF="gopher://gopher.bev.net:70/1" ADD_DATE="784432365" LAST_VISIT="0">BEV
Gopher</A>      <DT><A HREF="gopher://gopher.vt.edu/1/" ADD_DATE="784432365"
LAST_VISIT="0">Va Tech Gopher Server</A>      <HR>      <DT><A
HREF="http://www.bev.net/wnet.html" ADD_DATE="784432365"
LAST_VISIT="0">WNET Homepage</A><DD>Information & support for the WNET
system      <DT><A HREF="http://www.bev.net/wnet/wnet.faq.html"  ATE="784431196"
LAST_VISIT="0">Vatican Exhibit Main Hall</A>      <DT><A
HREF="http://www.whitehouse.gov/" ADD_DATE="784431196"
LAST_VISIT="0">Welcome to the White House</A>      <DT><A
```

Figure 8.2 - HTML syntax

How Do You Access the WWW?

Since the WWW consists of a graphical environment for accessing the Internet, a user who wants to access the WWW must have a **Web Browser** or access to web browser software. Examples of web browsers include: Netscape, Netcruiser, Mosaic, Lynx, and web browsers specific to on-line providers, such as America Online and Prodigy. These web browsers are an integration of all of the Internet tools, such as FTP, Gopher, etc., into one easy-to-use application. You can perform the same operations as FTP, Gopher, etc., and do them easier and within a graphical hypertext environment. Web browsers also usually allow computer operators to view documents before downloading them to their computers. Graphics, movies, and sound clips can be examined or heard so that users can then decide to download/save the file to their computers. See Figure 8.3 for an example of the Netscape web browser interface.

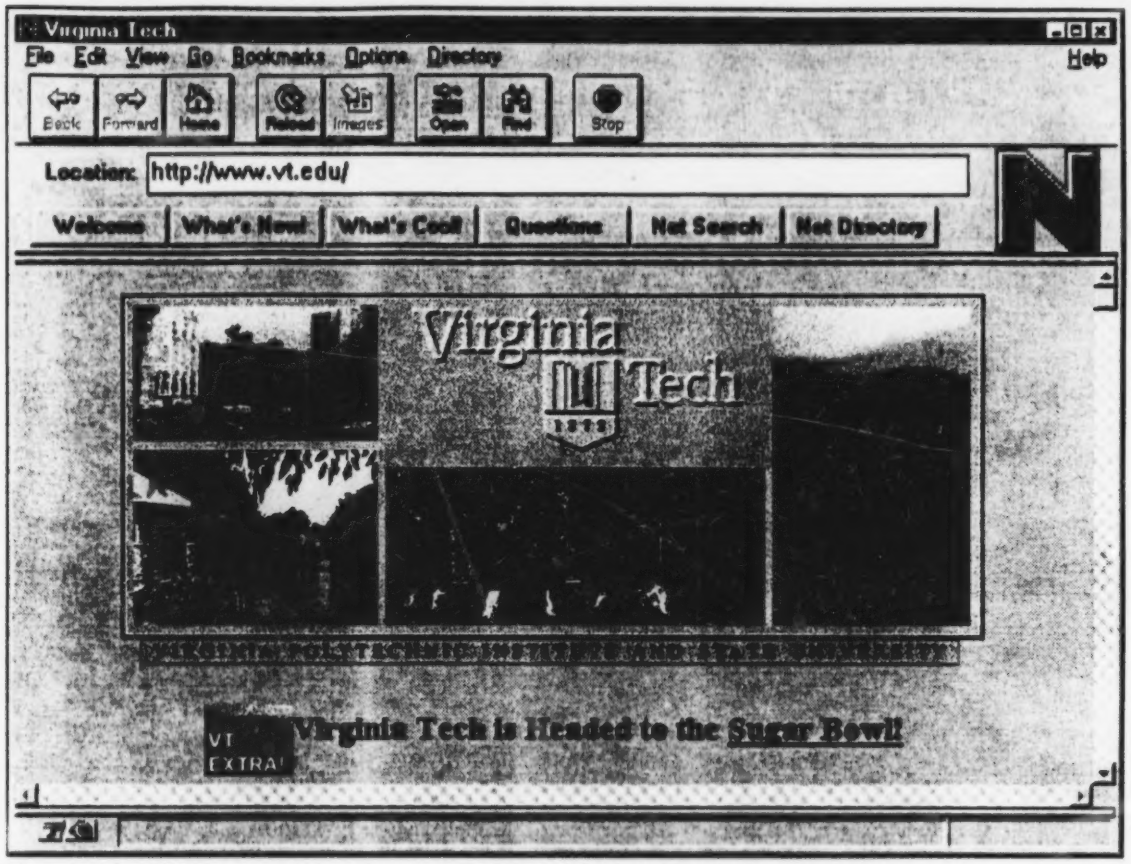
Virginia Tech
File Edit View Go Bookmarks Options Directory Help
Back Forward Home Reload Images Open Find Stop
Location: http://www.vt.edu/
Welcome What's New! What's Cool! Questions Net Search Net Directory
Virginia Tech
VT EXTRA!
Virginia Tech is Headed to the Sugar Bowl!

Figure 8.3 - Netscape main screen (connected to Virginia Tech's home page)

To access FTP sites, the user enters the FTP domain address, and the web browser does an anonymous login to the remote computer system and displays its directory structure as a series of folders and files that can be clicked, double-clicked, or dragged. See Figure 8.4 for an example of accessing an FTP site with a web browser. Gopher works the same way--just enter the Gopher address, and the Gopher menus appear and navigate as usual.

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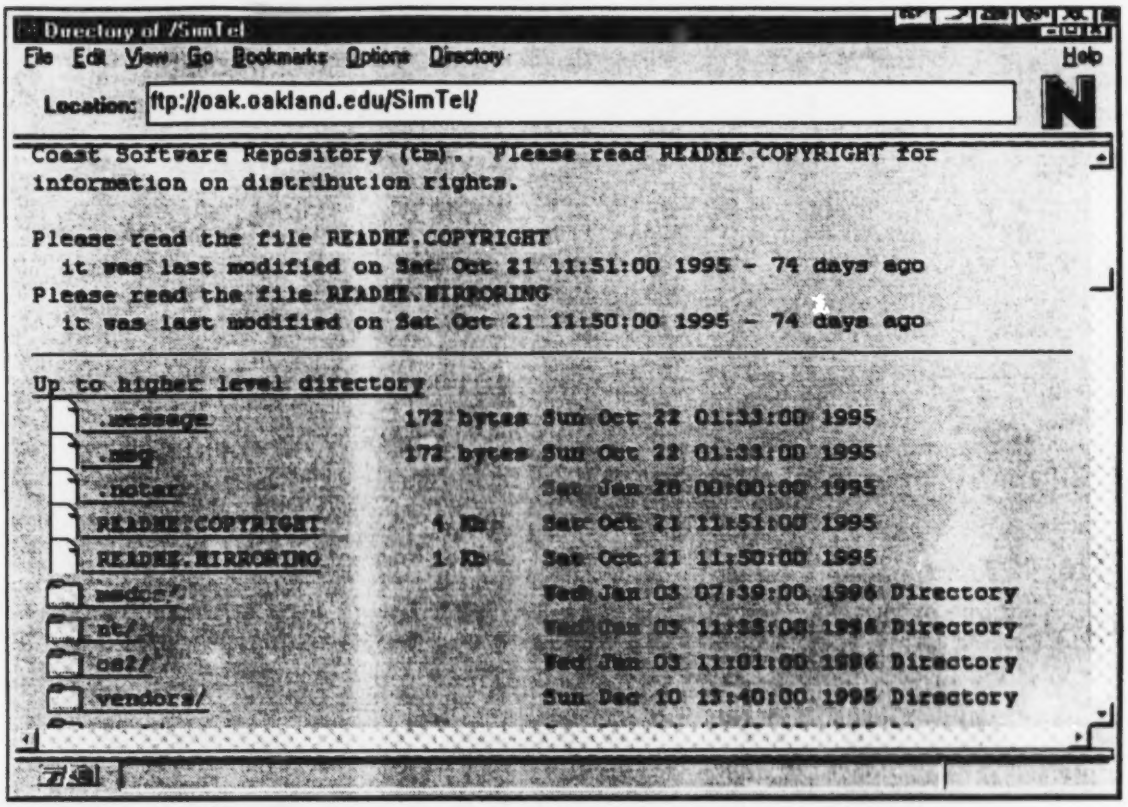
Directory of /SimTel
File Edit View Go Bookmarks Options Directory
Help
Location: ftp://oak.oakland.edu/SimTel/
Coast Software Repository (tm). Please read README.COPYRIGHT for
information on distribution rights.
Please read the file README.COPYRIGHT
it was last modified on Sat Oct 21 11:51:00 1995 - 74 days ago
Please read the file README.MIRRORING
it was last modified on Sat Oct 21 11:50:00 1995 - 74 days ago
Up to higher level directory
.message 172 bytes Sun Oct 22 01:33:00 1995
.msg 172 bytes Sun Oct 22 01:33:00 1995
.notar Sat Jan 28 00:00:00 1995
README.COPYRIGHT 4 Kb Sat Oct 21 11:51:00 1995
README.MIRRORING 1 Kb Sat Oct 21 11:50:00 1995
msdos/ Wed Jan 03 07:39:00 1996 Directory
nt/ Wed Jan 03 11:35:00 1996 Directory
os2/ Wed Jan 03 11:01:00 1996 Directory
vendors/ Sun Dec 10 13:40:00 1995 Directory

Figure 8.4 - Web Browser connected to an FTP site (note the address in the URL)

What is a Home Page?

A home page is a central location on the WWW, which a computer is set to access. Specifically, it is a graphical environment created using the HTML language, which can be accessed by web browser software, such as Netscape or Mosaic. It is a home site on a WWW computer. Individual users can create their own home pages or access home pages on other computer systems. Users can create their own home pages using HTML to access popular sites that are retrieved on a regular basis.

How Do I Get Information Off the WWW?

To download information to a computer, in most cases there will be an item on the home page from which to choose to download. When accessing an FTP site and downloading

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files, just click or double-click the desired file, and the web browser will either start the appropriate application to start the program on your system or will download the file and ask where (what directory) to store the file. If an application starts and displays the file, choose save from the application, and save the file as normal. When accessing graphics or other files, the computer will start an application and display the image first, unless the item is programmed to download the file to the user's computer. If the file is auto-downloading, it will usually be marked with an item that reads "click here to download this graphic/file."

How Do I Find Information On the WWW?

The WWW is big; if a user needs specific information, surfing will not likely produce quick results. Thankfully, a number of Web search engines are available on-line to assist users in finding information and other web sites. Several of these search engines include WWW-Worm, Webcrawler, and Lycos search engine. The best way to access these search engines is from a home page that has a link to the main engines. Netscape, for example, contains a button titled **Net Search** that will jump the user to a number of excellent search engines. The main home page will also likely have a direct link or bookmark to these search engines (see Appendix B for more interesting sites).

Bookmarks with web browsers are very similar to Gopher bookmarks (See Chapter 4). When users are on a Web page that they want to continue to access regularly, they should choose bookmarks and create a bookmark. The computer will store the current computer address and home page name in a default bookmark file or in a specific bookmark file that the user specifies.

What Internet Tool Should I Use?

As mentioned earlier, web browsers integrate all of the other internet tools into one easy-to-use application. This is true to a certain extent. For web browser software, users should use whatever one they can access. If accessing the WWW from a mainframe-based web browser, some users will be much more limited than others; however, they will still have access even if it is not the latest and greatest. Users who have all of the different Internet tools (FTP, Gopher, web browser, etc.) may still want to use the specific tool for the specific purpose at hand. For example, use FTP software to access FTP sites and download or manipulate files on a remote computer system. FTP software allows the user to perform many other activities such as file renaming, moving, directory creation, etc., whereas the web browser will only allow a user to download a file (in most cases). It is similar to the scenario of moving a large quantity of dirt from one location to another; it

can be done with many trips and headaches in a common-use pickup truck (web browser), but the job would be easier in a large, special-purpose dump truck (FTP).

What Type of Hardware Do I Need to Access the WWW?

Users do not need anything fancy to run web browser software. If the computer is currently running Internet software well, than a web browser should run fine. The only exception is the need for a fast modem and fast modem connection. At modem speeds under 14,400 baud, web browsers will operate very slowly. This slowdown is due to the large number of graphics that will have to be downloaded to a computer system to be viewed. Graphics are large files and will take substantially more time to download than text. The ideal connection would be a high-speed ethernet connection or very high-speed modem such as the new 28,800 baud modems. Modem speeds are also dependent on the computer system being accessed. Many on-line services can only accept modem speeds up to 14,400 or 9600 baud. Users should check with their service providers before purchasing a new modem.

How Do I Speed Up a Slow Connection?

With a slow modem, do not AUTOLOAD graphics, and be specific when accessing a remote WWW computer system. Surfing to find the location will slow the process. Go straight to your destination, if possible, by entering the specific URL address for the desired remote computer.

WWW Exercises (browsers)

1. Use the WWW as a research tool, as previously mentioned, to complete a report or project. Find and retrieve five articles.

2. Learn HTML and create an individual home page. The home page should contain descriptions of yourself, your experiences, and at least one graphic.

3. Learn HTML and create a class home page. The home page should include information about the class (objectives, projects, etc.) and at least three graphics. This should be a group project.

4. Learn HTML and create a home page to sell an item or service, etc. Use all resources available, including as many graphics as needed.

5. Use the WWW to find and retrieve binary files (graphics) for a class project. Use the graphics or other binary files for Exercises 2-4.

6. Use a WWW search engine, such as *Lycos* or *Webcrawler*, to find specific information or sites on the World Wide Web. Set the locations you found as bookmarks, and retrieve at least three articles.

Comprehensive Exercise

1. The most fun and inclusive of all exercises is the internet SCAVENGER HUNT. In this exercise, the instructor creates a list of people, places, and things to find and can add weights to the items to differentiate between novice-level work and expert-level work. Points are compiled after a set period of time, and a reward is given to the winner or top several winners. This hunt can be done individually or in groups. This activity is good because it is both fun and all inclusive (if created well) of the Internet tools available, i.e., Gopher, FTP, and Web browsers.

Chapter 9

Future of the Internet:

Where Are We Heading on This Superhighway?

The Internet has come a long way in the past several years and promises to continue getting better and to become more widespread in its use. Originally, computer systems used a wide range of software to access the Internet, and UNIX-based computer systems were the mainstay. Now companies such as Microsoft and IBM are including Internet access software in their operating systems. IBM has had Internet software included for a number of years in its OS/2 operating system. Microsoft jumped on the bandwagon this year with Internet access built into its new operating system, Windows95. Expect to see *all* computers being sold in the future to come with Internet access software included.

The software and availability of that software is but one aspect of accessing the Internet. One more important consideration is the capacity of the communication channel that is connecting a home personal computer to the Internet provider of choice. Current communication channels and modems allow users to access the Internet at a maximum speed of 28,800 baud; although this is the highest speed, most Internet providers only allow access at 14,400 baud. These speeds are adequate; however, when displaying and downloading graphics with a web browser (see Chapter 8 for information on web browsers), transmission at these speeds becomes rather slow and cumbersome. The phone companies around the United States are currently upgrading the communications lines to customers, homes, and communities. In the near future, we could see high-speed fiber optic communication lines connected directly to individual homes.

Entire communities are experimenting with the idea of an electronic town. In Blacksburg, Virginia, a project is currently underway that will ideally create an "electronic village", called the "Blacksburg Electronic Village." This concept evolves around the idea of every home in the community being linked with high-speed (usually Ethernet-based connections) lines to the Internet, with the ability to perform many transactions from within the home, from ordering pizza to communicating with town government representatives.

The future will also hold a greater integration of services from the different utility companies. The phone companies have been trying to offer cable television services, and the cable companies have responded that if the phone companies carry cable services, then they should be allowed to offer phone services. Even the power companies have been saying that they want a piece of the telecommunications pie. This enormous potential for competition in the telecommunications marketplace will provide for greater services and an integration of those services. Telecommunications companies are already pilot testing, in various areas, the potential for on-demand television and shopping services that allow customers to choose from 500+ TV stations and shopping

services. This integration is bound to increase to include not only shopping and TV services, but also Internet and other computer services.

One problem with the integration of many services into one has been the question of *how* to pay for the services. The method of payment may be changing as well. A bank-holding company in St. Louis is actually creating its own currency called "E-CASH." This E-cash, or electronic cash, is a new way to pay for Internet-based services or products purchased on the Internet. It is currently being pilot tested, but provides the potential to open the Internet into a *global* marketplace. The greatest threat is the security of the funds transfer; however, the creators of e-cash and other experts say that the encryption methods used are very secure, but not perfect.

The possibility of government legislation playing a major part in the evolution of the Internet is still a reality. The United States government laid the foundation of the Internet and still holds extensive rights in the monitoring and maintenance of it. Since the government has a stake in the Internet, it has attempted to regulate its usage with several pieces of recent legislation. The U.S. government has attempted to sell its rights to a number of telecommunications giants to allow them to run and maintain the Internet. Additionally, the government has recently attempted to censor the material that is allowed to flow over the Internet in an attempt to control the amount of pornographic and other offensive material. Most legislation is still pending; however, expect to see more legislation and controls to be established by government intervention.

Finally, if you are not on the Internet NOW, get on it soon. If you don't, you will either be forced to later, or be left behind as society and technology continue to advance into the next millennium.

Appendices

Listed below are several suggested book references for those individuals interested in advanced Internet exploration and procedures for establishing an Internet site/server.

Bang, S., et al. (1995). The Internet unleashed (2nd ed.). Indianapolis, IN: Sams.net.

Bean, G. (1995). Internet server: Construction kit for Windows (including CD-ROM). New York: John Wiley & Sons.

Dowd, K. (1995). Getting connected: Establishing a presence on the Internet. Sebastopol, CA: O'Reilly & Associates.

Estrada, S. (1993). Connecting to the Internet. Sebastopol, CA: O'Reilly & Associates.

Hunt, C. (1992). TCP/IP network administration. Sebastopol, CA: O'Reilly & Associates.

Kessler, G. (1993). ISDN concepts, facilities, and services (2nd ed.). New York: McGraw-Hill.

Krol, E. (1994). The whole Internet: User's guide & catalog (2nd ed.). Sebastopol, CA: O'Reilly & Associates.

Liu, C., Peek, J., Jones, R., Buus, B. & Nye, A. (1994). Managing Internet information services. Sebastopol, CA: O'Reilly & Associates.

Lynch, D. C. & Rose, M. T. (eds.). (1993). The Internet system handbook. Reading, MA: Addison-Wesley.

Mudry, R. J. (1995). Serving the Web. Scottsdale, AZ: Coriolis Group Books.

Quarterman, J. & Smoot, C. (1993). The Internet connection. Reading, MA: Addison-Wesley.

Stein, L. D. (1995). How to setup and maintain a World Wide Web site: The guide for information providers. Reading, MA: Addison-Wesley.

Site address	Description
General sites	
askeric@ericir.syr.edu	AskERIC service, operated by the ERIC clearinghouse on information and technology where teachers, library media specialists, administrators, and parents nationwide can get answers to education questions. Questions sent by E-MAIL are answered within 48 hours.
ndrc@inet.ed.gov	National Center for Education Statistics (NCES). Send E-MAIL requests to this address.
almanac@inet.ed.gov	U.S. Department of Education database accessible via E-MAIL. Type "send catalog" in the body of the message to receive more information.
president@whitehouse.gov	E-mail address for the President of the U.S.
vice-president@whitehouse.gov	E-mail address for the Vice-President of the U.S.
FTP	
ftp.ed.gov	U.S. Department of Education.
oak.oakland.edu	Oakland archives, shareware/freeware storage location.
ftp.microsoft.com	Microsoft Corporation FTP site for software updates and updated software drivers.
Newsgroups	
Any group with **K12**	K-12 related newsgroups
alt.education.distance	Distance education
misc.education	Misc. education topics
misc.education.adult	Misc adult education topics
comp. groups	Computer-related issues
K12.ed.business	Business Education (K-12) newsgroups
Gopher sites	
ericps.ed.uiuc.edu	ERIC gopher site, National Institute on Student Achievement, Curriculum and Assessment (SAI).

Site address	Description
Gopher sites (continued)	
gopher.ed.gov	U.S. Department of Education--Office of Educational Research and Improvement (OERI).
gopher.nara.gov	Federal Register. It is available only by subscription, but you can view the table of contents free.
Web sites (WWW)	
http://www.ed.gov	Web site for the U.S. Department of Education & National Library of Education
http://ericir.syr.edu	AskERIC
http://www.fsu.edu/~flstwp/fl-stwp.html	Florida School-to-Work Clearinghouse
http://lycos.cs.cmu.edu/	Lycos search engine for searching the Internet by keywords
http://vocserve.berkeley.edu/	National Center for Research in Vocational Education
http://www.yahoo.com	A catalog of interesting sites on the WWW
http://www.petersons.com	Peterson's guides to colleges
http://www.thejournal.com	T.H.E. Journal home page, devoted to technological horizons in education
http://www.microsoft.com	Microsoft Corporation site
http://www.novell.com	Novell Corporation site
http://www.fedworld.gov	Federal World, many interesting links
http://www.loc.gov	Library of Congress Home page
http://webcrawler.com	Webcrawler internet search tool
http://www.ziff.com	Ziff-Davis Publishing WWW server
http://www.whitehouse.gov	Welcome to the White House

DELTA PI EPSILON, founded in 1936, is a national honorary professional graduate society for men and women devoted to the advancement and professionalization of business education. Through its ideals of service, leadership, and cooperation, the society strives to make significant and unique contributions to professional growth and scholarly achievement in business education. In the words of its founder, Dr. Paul Lomax, can be seen the scope of the society, "The professional interest of Delta Pi Epsilon encompass the whole of business education in relation to the entire fields of American business and American education. Its membership must always think in terms of the common good and advancement of all our business teachers and of all students who pursue courses in business education."

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